



SERVICE MANUAL

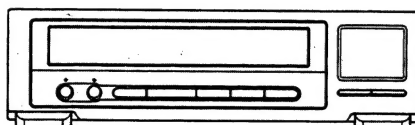
SVM-PX-001-1E
68139 - 242 - 001

MODEL : PX-990R/991R/
992R/VPX-43R

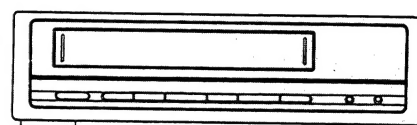
VIDEO CASSETTE PLAYER



PX-990/990R/VPX-43R



PX-991/991R



PX-992/992R

SPECIFICATION

Format :	VHS PAL standard
Television System :	CCIR Standard System
Color System :	PAL, MESECAM
Audio Track :	1 track
Tape Width :	12.7 mm (1/2 inch)
Tape Speed	
SP :	23.39 mm/s (0.92 inch/s)
Playback Time :	180 min. With E-180 used in SP mode
FF/REW Time:	Less than 5 min. With E-120
Heads :	Video : 2 rotary heads (Helical scanning system) Audio/Control : 1 Stationary head
VIDEO	
Output :	VIDEO OUT jack (RCA) 1.0Vp-p 75 ohm unbalanced
Signal-to-Noise Ratio :	better than 40dB
Horizontal Resolution :	more than 220 lines
AUDIO	
Output :	AUDIO OUT jack (RCA) -6dBm, 600 ohm unbalanced
Signal-to-Noise Ratio	
SP :	better than 40dB
Frequency Response	
SP :	100Hz - 7KHz
RF Modulated :	Channel 32 - 40 (Preset CH36)
Power Requirement :	AC : 220V/50Hz, DC : 12V
Power Consumption :	Approx. 17 Watts
Operatin Temperature :	41 °F - 104 °F (5 °C - 40 °C)
Operating Humidity :	10% - 75%
Weight (net) :	4.5Kg
Dimensions (net) :	80 (H) x 300 (W) x 337 (D) mm

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1. GENERAL DESCRIPTION

1-1. SAFETY PRECAUTIONS

1. Before returning a Video Cassette Recorder to the customer, always make a safety check of the entire instrument, including, but not limited to the following items:

a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing.
(1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.

(2) When reassembling the instrument, be sure to put back in place all protective devices, including, but not limited to nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks.

Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contract a hazardous voltage. Such openings include, but are not limited to,

(1) excessively wide cabinet ventilation slots, and (2) improperly fitted and/or incorrectly secured cabinet covers.

c. **Antenna Cold Check**-With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position.

Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, to each of the coaxial connectors.

If the measured resistance is less than 1.0 megaohm or greater than 5.2 megaohm, an abnormality exists that must be corrected before the instrument is returned to the customer.

Repeat this test with the instrument AC switch in the off position.

d. **Leakage Current Hot Check**-With the instrument completely reassembled plug the AC line cord directly into a 220 (240V-UK) AC outlet. (Do not use an isolation transformer during this test). Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 *Leakage Current for Appliances* and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, Measure from a known earth ground (metal waterpipe, conduit, etc) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screwheads, metallic overlay, controls shafts, etc), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the instrument power cord plug in the outlet and repeat test.

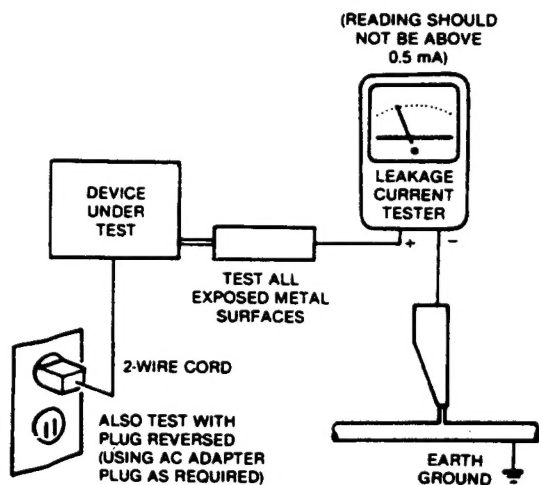
ANY MEASUREMENT NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR CONNECTING ANTENNA OR ACCESSORIES.

e. AC Leakage Test

Avoid shock hazards. The television instrument, accessory, or cables (s) to which this VCP is connected should have the applicable sections of the antenna cold check and the leakage current hot check performed. Do not connect this VCP to a TV antenna, cable or accessory that exhibits excessive leakage currents.

2. Read and comply with all caution and safety related notes on or inside the VCP cabinet and chassis.

3. **Design Alteration Warning**-Do not alter or add to the mechanical or electrical design of this Video Cassette Recorder. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer responsible for personal injury or property damage resulting therefrom.



AC Leakage Test

4. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts-be sure that leads and components do not touch thermally hot parts, c. the AC supply, and d. antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between components, and between components and the printed circuit board. Check AC power cord for damage.

5. Components, parts and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take of corrective action to remove any potential safety hazard.

6. Product Safety Notice

Some electrical and mechanical parts have special safety related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage etc. Parts that have special safety characteristics are identified by a (*) or (⚠) on schematics and parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards.

Products safety is under review continuously and new instructions are issued whenever appropriate.

Electrostatically Sensitive (ES) devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

IMPORTANT SAFETY NOTICES

Components identified with the mark ⚠ have the special characteristics for safety when replacing any of these components. Use only the same type.

1-2. GENERAL INFORMATION

* Operation Modes

Play, still and noise cancel, forward search and JET forward search, reverse search and JET reverse search, fast forward and rewind, V-Lock, auto repeat and shut off operations are possible. Two video head system uses two video heads on the upper drum. Two video heads (CH-1/CH-2 : +70um/-90um) are used during playback at SP mode.

* Automatic power on

The VCR will automatically turn power on when you insert a cassette without pushing power button.

* Automatic playback

When you insert a cassette, the VCR will turn power on and playback automatically without pushing power and play button. If you want to go to "REW or FF" mode directly after inserting the cassette, you must do a STOP-REW (FF) in sequence.

* Automatic Rewind

The VCR automatically rewinds the tape when the tape is reached to the end.

* Search (JET)

If you push FF/REW button twice for "reverse picture search" or "forward picture search" picture search is performed 9 times as fast as normal speed.

* V-Lock (REMOCON OPTION)

This function adjusts vertical shaking of TV screen by Remote Control.

* Tracking (UP/DOWN)

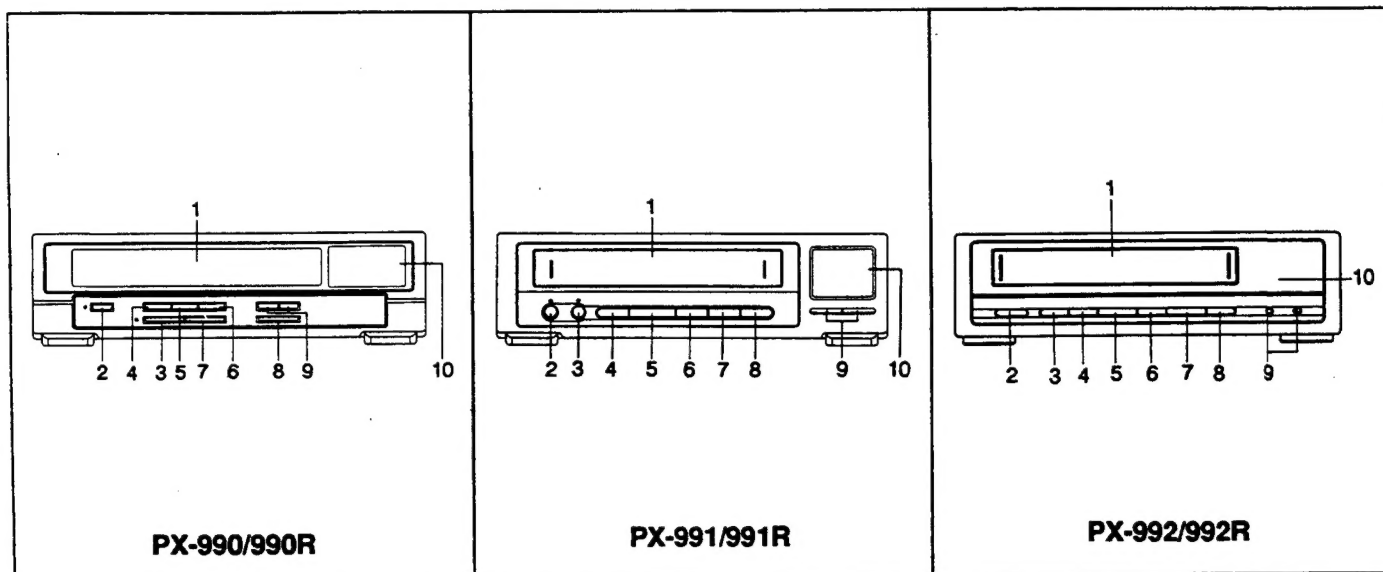
This button is to be used to eliminate streaks (Noise bar) from the picture during playback and search mode. (Normally auto tracking is performed)

* Quick start

This is to shorten the switching time from stop mode to play mode by Full Loading Deck.

1-3. OPERATING FUNCTION AND CONTROLS

1-3-1. FRONT VIEW



1. VIDEO CASSETTE COMPARTMENT

Push the cassette gently into the compartment until you feel automatic pull. Then, power turns on automatically and VCR goes to "PLAY MODE".

2. ON/STANDBY Button

Push this button to turn power ON or STANDBY.

3. STOP/EJECT Button

Push to stop the tape during playback, rewind, fast-forward forward or reverse picture search, and push this button to remove the cassette tape from the set in stop mode.

4. REW (Rewind/Reverse Picture search/JET-RPS) Button

Push this button to rewind the tape. Push for reverse picture search during playback. Push for high speed reverse picture search during the reverse picture search. When the picture reaches the point you are looking for, push the PLAY button to resume normal playback.

5. PLAY Button

Push this button to playback a recorded tape.

6. FF (Fast Forward/Forward Picture Search/JET-FPS) Button

Push to move the tape forward rapidly. Push for forward picture search during playback. Push for high speed forward picture search during the forward picture search. When the picture reaches the point you are looking for, push the PLAY button to resume normal playback.

7. STILL/NOISE CANCEL Button

Push this button to stop the tape temporarily during playback, and push this button repeatedly to clear the noise bar in still mode.

8. AUTO REPEAT/SHUT OFF Button

You can experience AUTO REPEAT PLAY or AUTO SHUT OFF after rewind with this button. The unit will do auto repeat play when the AUTO REPEAT LED lights by pressing button. The unit will do auto shut off when the AUTO REPEAT LED goes out by pressing button.

9. TRACKING DOWN or UP Buttons (▼, ▲)

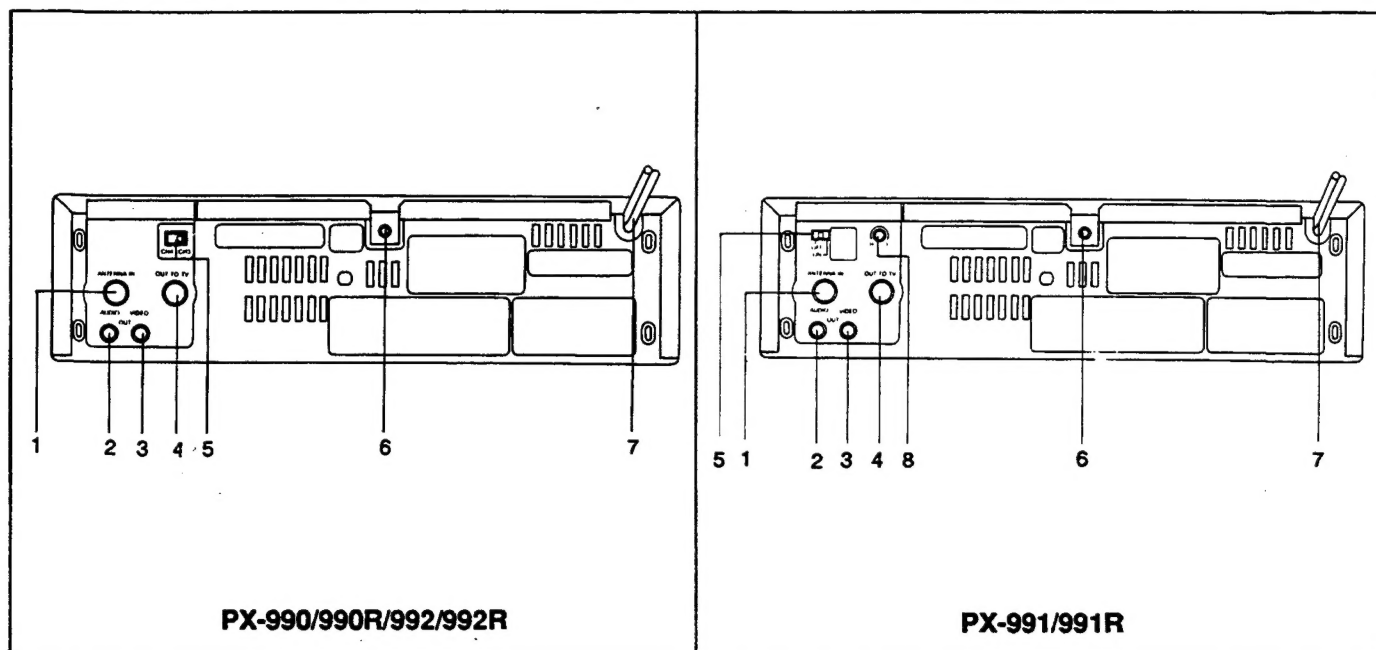
Press these buttons to remove noise bar in playback mode.

10. INDICATOR (OPTION)

NOTE:

If you want to go to "FF (REW)" mode directly after inserting the tape, you must do a "STOP-FF (REW)" sequence.

1-3-2. REAR VIEW



1. ANTENNA IN

Connect external antenna.

2. AUDIO OUT

Permits audio connection of your unit to a monitor or another VCR.

3. VIDEO OUT

Permits video connection of your unit to a monitor or another VCR.

4. RF OUT

Connect to TV antenna (aerial) input.

5. CHANNEL OUTPUT SELECTOR

(PX-990/990R/992/992R)

Switch to CH 3 or 4, whichever is not used in your area. To view tapes in "PLAYBACK MODE" and to use your TV as a monitor.

5. TEST ON/OFF (PX-991/991R)

Turn this switch ON and check that video channel of your TV set is correct. After setting, set this switch to OFF.

6. DC POWER JACK

Permits power source connection of your unit to a DC battery or car battery.

7. ELECTRICAL (POWER) CORD

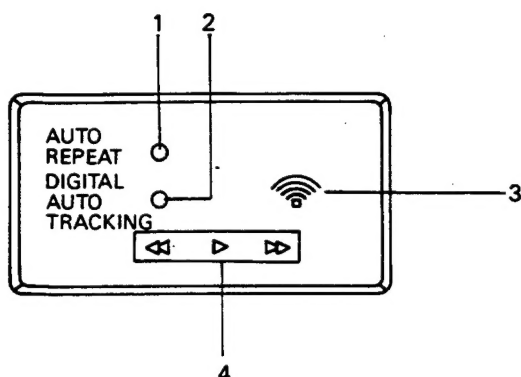
8. RF CHANNEL PRE-SET (PX-991/991R ONLY)

In some areas the pre-set RF output of your video cassette player may clash with a TV broadcast. If this occurs rotate this control using a small screwdriver clockwise or counter-clockwise. A new video channel has now been set and you will need to retune your television video channel to the new RF output.

CAUTION:

After providing DC power source (12V), if DC power source level of a DC battery or car battery drops, noise bar may be flowed in FF/REW picture search mode.

1-3-3. INDICATOR



1. AUTO REPEAT/SHUT OFF INDICATOR

Auto repeat led turns on in auto repeat play mode.

2. TRACKING INDICATOR

Digital auto tracking led turns on in auto tracking mode.

3. INFRARED REMOTE SENSOR

Receives infrared signal from remote control.

1-2-4. REMOTE CONTROL

4. DETAILED OPERATING CONTROLS

* PLAY (▶)

This LED turns on in PLAY mode.

* REW (◀◀)

This LED turns on in REW mode.

* REVERSE PICTURE SEARCH/JET-RPS (◀◀, ▶)

This LED turns on in FPS or JET-FPS mode.

* FF (▶▶)

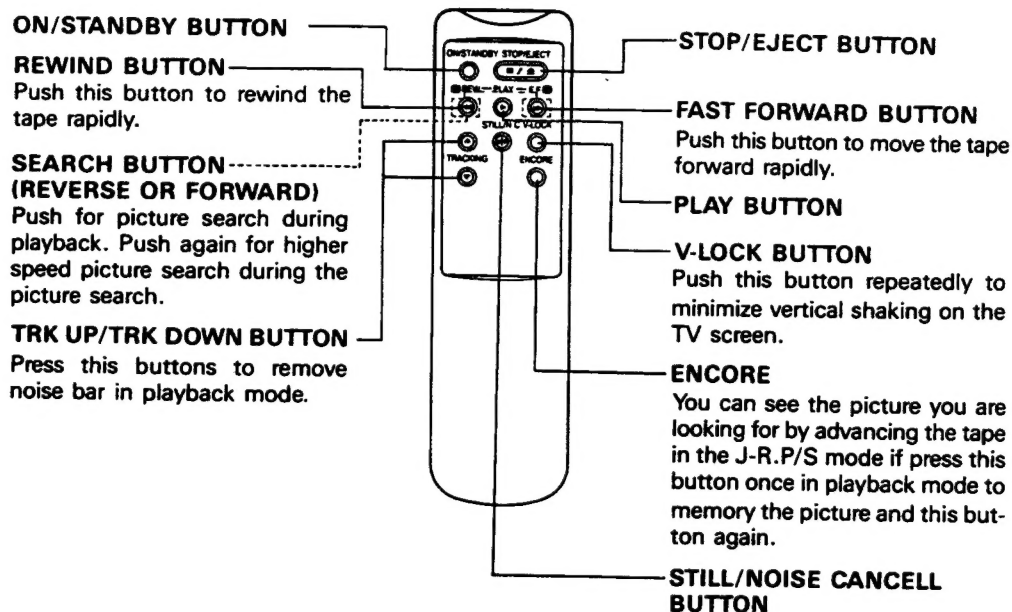
This LED turns on in FF mode.

* FORWARD PICTURE SEARCH/JET-FPS (▶, ▶▶)

These LED turns on in FPS or JET-FPS mode.

* STILL/NOISE CANCEL (▶)

This LED blinks in STILL mode



1-4. CLEANING AND LUBRICATION

1-4-1. CLEANING TAPE MECHANISM

Periodic cleaning is necessary to insure continued excellent performance of the tape mechanism. To clean the following parts, patch and solvent are available.

1. Capstan shaft.
2. All idler wheels.
3. All tape guide posts.
4. Supply and take-up reels.
5. Pinch roller.
6. Capstan belt.
7. Capstan motor pulley.

To clean video heads, full erase head, and audio/control (A/C) head, use only head cleaning kit and solvent.

Note : When cleaning video heads, move the cleaning stick in the direction of head rotation. Wiping in a vertical direction may damage the heads.

1-4-2. LUBRICATION TAPE MECHANISM

The tape transport mechanism is properly lubricated at the factory. In normal use cycles, and with average environmental conditions, additional lubrication should not be required. When relubricating, remove old lubricant

first, then sparingly apply new lubricant.
(Excessive lubricant may be transferred to other assemblies causing malfunction).

Use grease on the following parts every 1,000 hours of operations. (See exploded view for location)

1. Between base pole assembly (L,R) and main base.
2. Pinch roller base cam.
3. Gear master cam.
4. Gear E/J drive.
5. Gear L/D "L,R".
6. Base pole edge.
7. Slide main brake.
8. Bracket E/J drive.
9. Sector gear.

Oil may be required for the following parts after 1,000 hours of operation.(See exploded view for location).

Main base

1. Arm tension mould.
2. Shaft reel disk "L,R" mould.
3. Shaft gear worm wheel.

Other parts which are not listed above do not be required lubrication, except when parts are replaced. Use appropriate oil or grease as indicated on exploded view.

1-5. ABBREVIATIONS

2X : Double
4.43MHz : Color Sub Carrier

ACC : Automatic Color Circuit
ACK : Automatic Color Killer
ADD : Adder
AFC : Automatic Frequency Control
AFT : Automatic Fine Tuning
AGC : Automatic Gain Control
AL : Always
ALC : Automatic Level Control
AMP : Amplifier
APC : Automatic Phase Control
AUX : Auxiliary

BATT : Battery
BD : Burst Deemphasis
BE : Burst Emphasis
BH : Power Supply for Selecting VHF High Band
BL : Power Supply for Selecting VHF Low Band
BPF : Band Pass Filter

C.FG : Capstan Frequency Generator
C.SYNC : Composite Sync
CAFC : Capstan Auto Frequency Control
CAPC : Capstan Auto Phase Control
CATV : Cable TV
CAR : Carrier
CAP : Capstan
CCD : Charge Coupled Device
CH : Channel
CHAR. : Character
CHROMA : Chrominance
CM : Capstan Motor
COMP : Comparator
CST : Cassette
C-ERR : Capstan Error
CTL : Control
C.PG : Capstan Pulse Generator
CUR.EMPH : Current Emphasis

D.FG : Drum Frequency Generator
D.O.C : Drop Out Compensator
D.PG : Drum Pulse Generator
D/A : Digital-to-Analog
D/C : Dark/Clip
D.AFC : Drum Auto Frequency Control
D.APC : Drum Auto Phase Control

DE-EMPH : De-Emphasis
DET : Detector
DEV : Deviation
DLYD : Delayed
DM : Drum Motor
DEMODO : Demodulator
D.D : Direct Drive

E-E : Electronic-to Electronic
EMPH : Emphasis
ENV : Envelope
EQ : Equalizer

FADV : Frame Advance
F-V : Frequency to Voltage Converter
FFWD : Fast Forward
FH : Frequency Horizontal
FG : Frequency Generator
FM : Frequency Modulator
FSC : Frequency Sub Carrier
FWD : Forward
FC : Frequency Center
FL : Frequency Low

GEN : Generator
GND : Ground

HPF : High Pass Filter

IF : Intermediate Frequency
IR : Infrared Receiver

LED : Light Emitting Diode
LIM : Limiter
LPF : Low Pass Filter
LUMA : Luminance
LCD : Liquid Crystal Display
LNR : Linear

MIX : Mixer
MM : Monostable Multivibrator
MTS : Multi Sound Television System
MEM : Memory

N.C : No Connection
NORM : Normal

OSC	: Oscillator	TP	: Test Point
OTR	: One Touch Recording	TRK	: Tracking
OSP	: On Screen Programme		
OSD	: On Screen Display		
		UL	: Unloading
PB	: Play Back	VT	: Tuning Voltage
P.C	: Power Control	VP	: Vertical Lock pulse
PG	: Pulse Generator	V-REF	: Voltage Reference
PIF	: Picture Intermediate Frequency	V-SYNC	: Vertical Sync
PLL	: Phase Lock Loop	VCO	: Voltage Controlled Oscillator
PRG	: Programme	VCR	: Video Cassette Recorder
		VIF	: Video Intermediate Frequency
PWM	: Pulse Width Modulation	VPS	: Video Programming System
PWR	: Power	VHS	: Video Home System
P/S	: Pause/Still	VXO	: Voltage Controlled Crystal Oscillator
PD	: Power Detector	VSS	: Voltage Super Source
		VISS	: VHS Index Search System
REG	: Regulator		
REC	: Record	W/C	: White /Clip
REC.SAF	: Record Safety	W/D	: White/Dark
REW	: Rewind		
RF	: Radio Frequency	Y	: Luminance
REV	: Revers		
RECT	: Rectifier		
REF	: Reference	uP	: Microprocessor
SC	: Simul-Cast		
SC	: Sub-Carrier		
SCK	: Shift Clock		
SDA	: Serial Data		
SIF	: Sound Intermediate Frequency		
SP	: Standard Play		
SW25Hz	: Head Switching Pulse		
SYNC	: Synchronizing Signal		
SYSCON	: System Control		
STB	: Strobe		
SI	: Serial Input		
SO	: Serial Output		
SW	: Switch		

2. DISASSEMBLY

2-1. INSTRUMENT DISASSEMBLY

2-1-1. Top Cabinet Removal

- 1) Remove four (4) screws located at both sides of the top cabinet.
- 2) Carefully lift the top cabinet and slide it to the rear to remove.

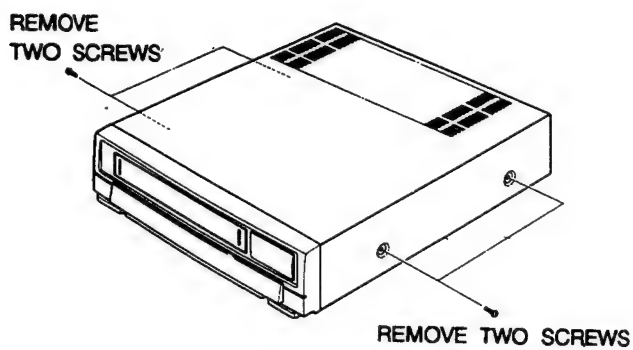


Fig.1 Top Cabinet Removal

2-1-2. Front Panel Removal

- 1) Remove the top cabinet (Fig. 1).
- 2) Release seven (7) tabs from the bottom, top and both sides of the front panel.
- 3) Tilt the front panel forward to remove.

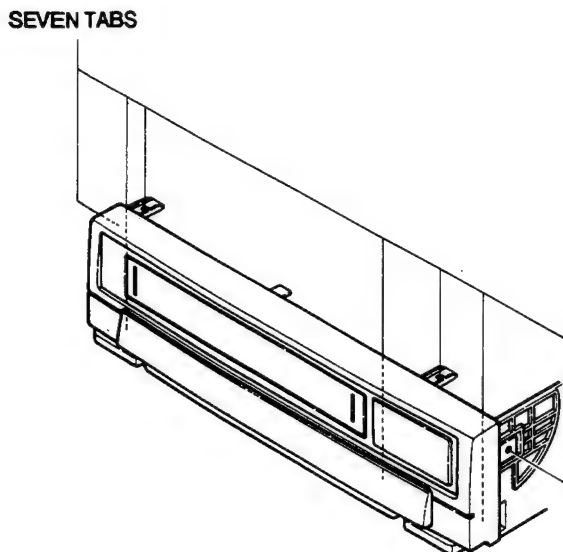


Fig. 2 Front Panel Removal

2-1-3. Bottom Cover Removal

- 1) Push the bottom cover toward arrow and remove it.

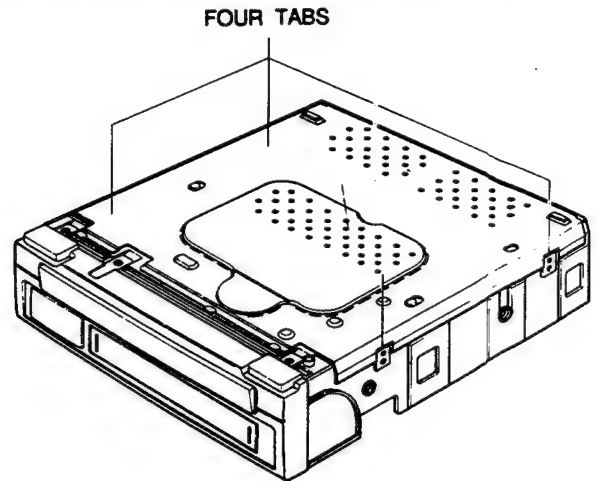


Fig. 3 Bottom Cover Removal

2-1-4. Main A Circuit Board Removal

- 1) Follow the procedure for removing top cabinet (Fig. 1).
- 2) Remove three (3) screws from the frame.
- 3) Remove bracket syscon and disconnect two (2) connectors (CN301, CN302) which connect main A and function board.
- 4) Lift the main A PCB toward the arrow to remove.

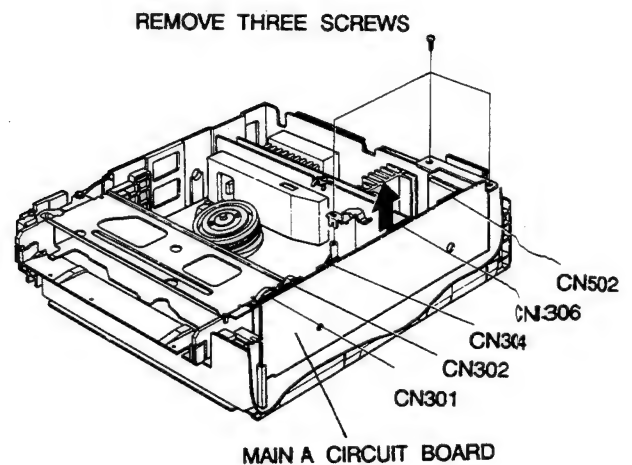


Fig. 4 Main A Circuit Board Removal

2-1-5. Main B Circuit Board Removal

- 1) Follow the procedure for removing top cabinet (Fig. 1).
- 2) Remove one (1) screw from the frame and lift up the bracket.
- 3) Disconnect one (1) connector (CN401) from the Main B circuit board and disconnect one (1) connect (CN502) from the Main A circuit board.
- 4) Lift the PCB toward arrow to remove.

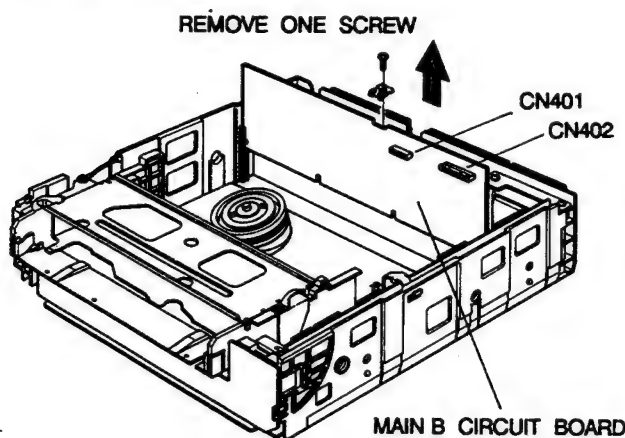


Fig. 5 Main B Circuit Board Removal

2-1-6. Function Circuit Board Removal

- 1) Follow the procedures for removing the top cabinet (Fig. 1), front panel (Fig. 3).
- 2) Disconnect two (2) lead connectors (CN601, CN602) from the main A circuit board.
- 3) Release five (5) tabs on the function circuit board.

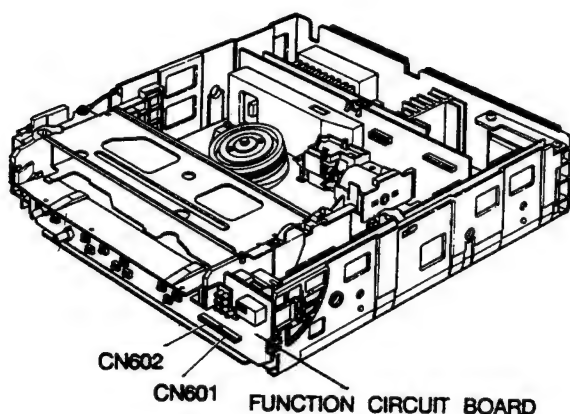


Fig. 6 Function Circuit Board Removal

2-1-7. Pre-Amp Circuit Board Removal

- 1) Follow the procedure for removing the top cabinet (Fig. 1).
- 2) Remove two (2) screws holding the Pre-Amp to the frame.

- 3) Disconnect two (2) connectors on the Pre-Amp circuit board,
- 4) pull out the Pre-Amp ass'y in the direction of the arrow and then release shield cases.

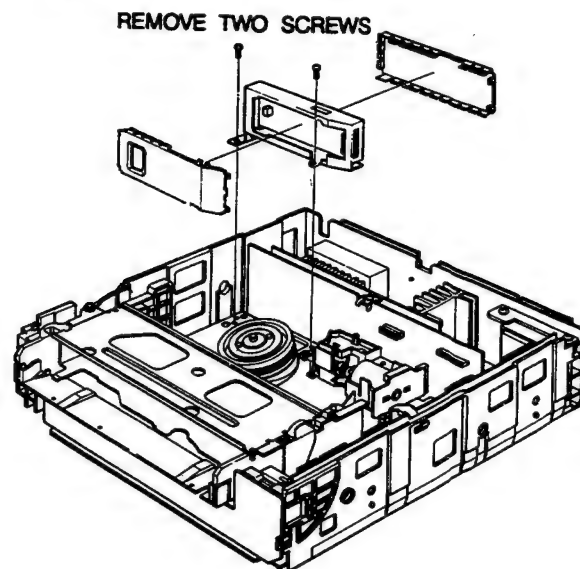


Fig. 7 Pre-Amp Circuit Removal

2-1-8. Regulator Assembly Removal

- 1) Follow the procedure for removing the top cabinet (Fig. 1).
- 2) Remove one (1) screw securing the regulator ass'y.
- 3) Disconnect two (2) connectors (CN101, CN102) on the regulator circuit board.
- 4) Release one (1) tab while pushing the regulator ass'y toward A and then lift the regulator ass'y toward B.

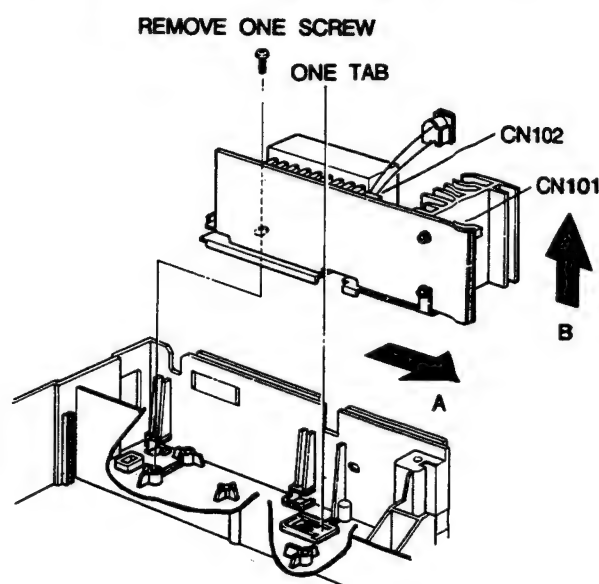


Fig. 8 Regulator Circuit Board Removal

2-2. MECHANICAL DISASSEMBLY

Tape Transport Mechanism Identification (Top Side)

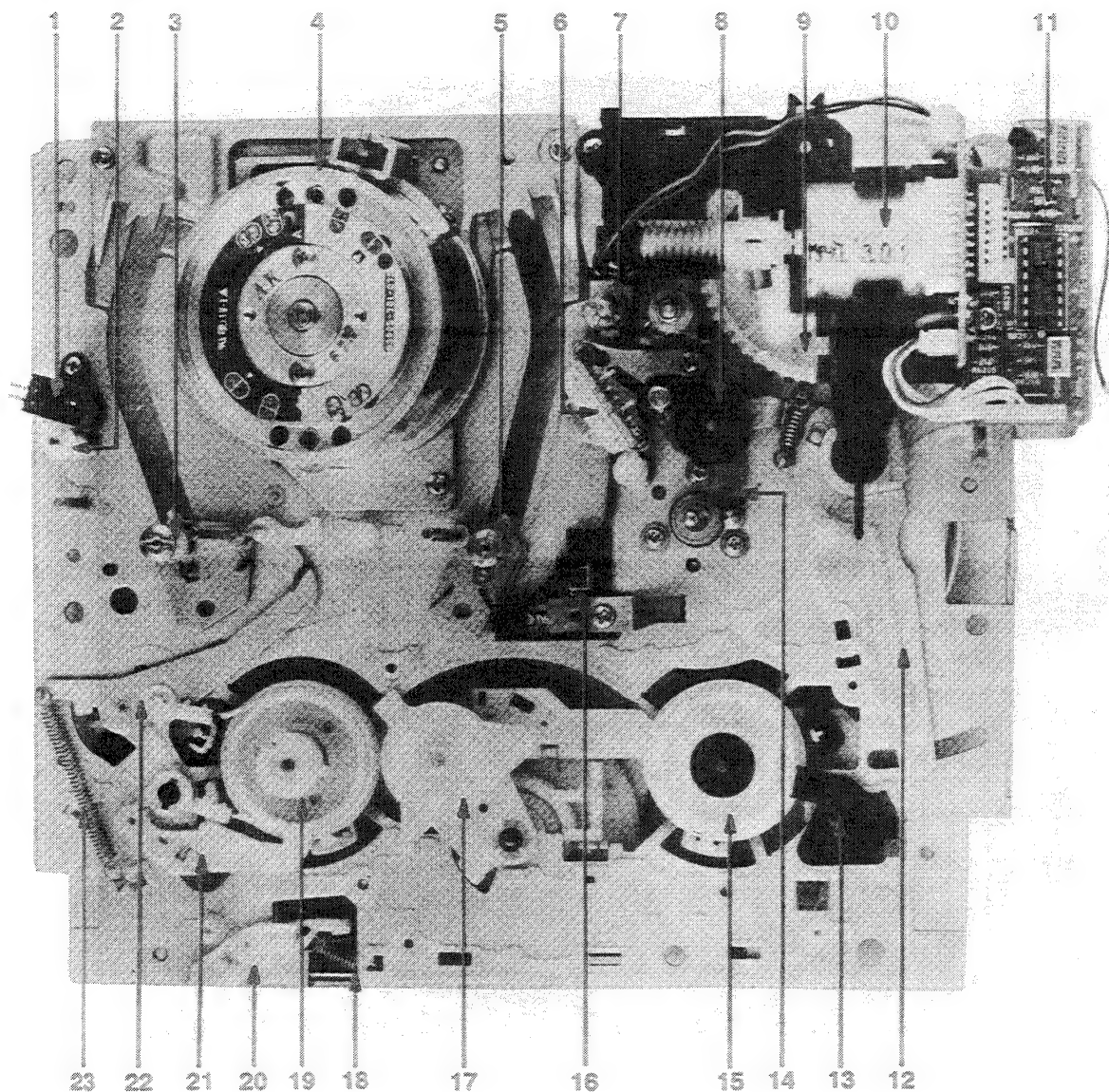


Fig. 9 Tape Transport Mechanism-Top View

- 1. DUMMY HEAD
- 2. SUPPLY ROLLER
- 3. POLE BASE "L" ASS'Y
- 4. CYLINDER ASS'Y
- 5. POLE BASE "R" ASS'Y
- 6. A/C HEAD ASS'Y
- 7. CAM ADJUST
- 8. PINCH ROLLER LEVER ASS'Y
- 9. MASTER CAM GEAR
- 10. L/D UNIT ASS'Y
- 11. P.C.B JOINT ASS'Y
- 12. BRAKE LEVER CAM ASS'Y

- 13. SUB BRAKE "R"
- 14. REVIEW DISK (R)
- 15. REEL DISK (R)
- 16. LED ASS'Y
- 17. SUB IDLER ASS'Y
- 18. REC S/W SPRING
- 19. REEL DISK (L)
- 20. REC S/W LEVER
- 21. SUB BRAKE "L"
- 22. TENSION ARM ASS'Y
- 23. TENSION SPRING

* Item 18, 20 are exclusive in PB ONLY model.

(Bottom Side)

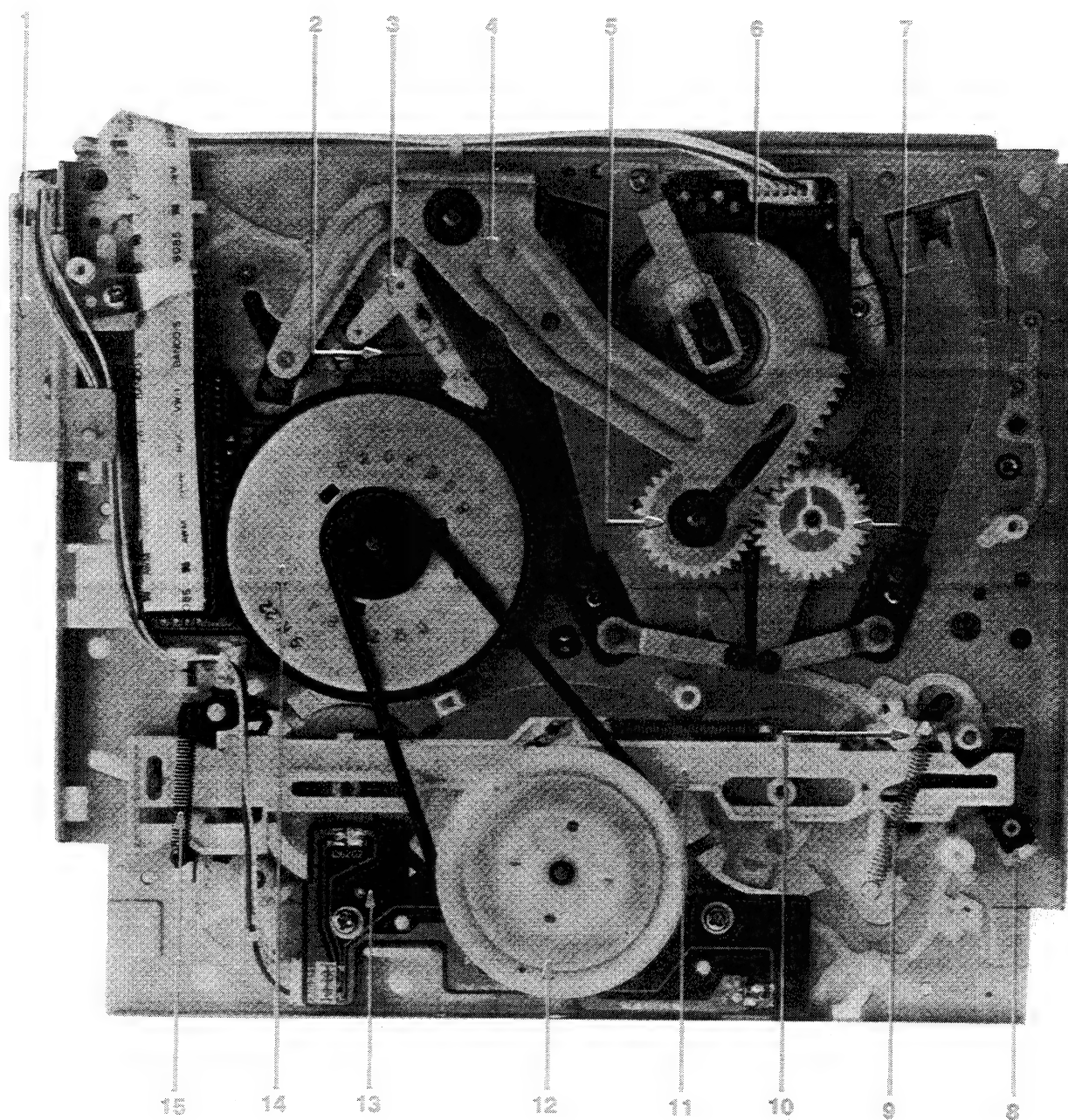


Fig. 10 Tape Transport Mechanism-Bottom View

1. EJECT DRIVE BRACKET
2. D.D CAPSTAN BRAKE SPRING
3. D.D CAPSTAN BRAKE
4. SECTOR GEAR ASS'Y
5. LOADING GEAR "R" ASS'Y
6. CYLINDER MOTOR
7. LOADING GEAR "L" ASS'Y
8. TENSION CONTROL LEVER

9. SUB SPRING "L"
10. MAIN BRAKE "L"
11. MAIN BRAKE SLIDE ASS'Y
12. CLUTCH ASS'Y
13. REEL P.C.B ASS'Y
14. D.D CAPSTAN MOTOR
15. SUB SPRING "R"

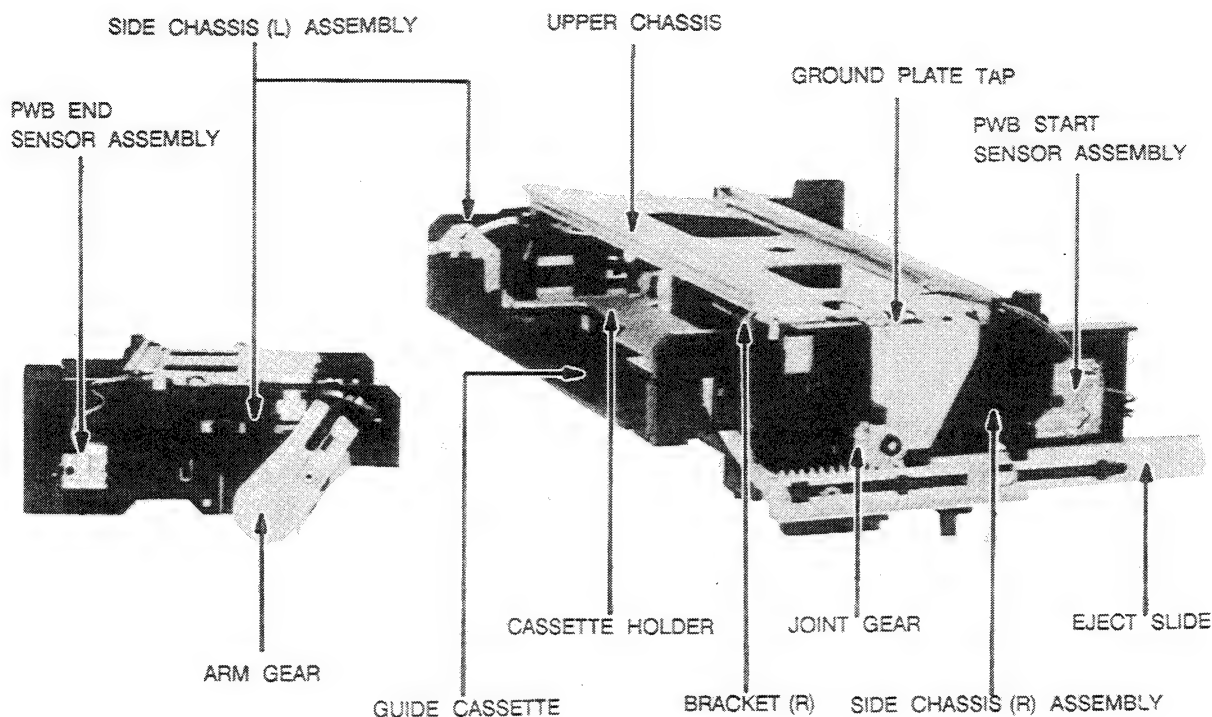


Fig. 11 F/L Housing Assembly Identification

2-2-1. Housing Assembly Removal

1. Follow the procedure for removing the cover (See Figs 1 to 3).
2. Disconnect the housing sensor connector from the PWB Deck Joint.
3. Remove two (2) screws holding the housing assembly and the Main Base.
4. Push the housing assembly in the direction of arrow A and then lift up in the direction of arrow B.

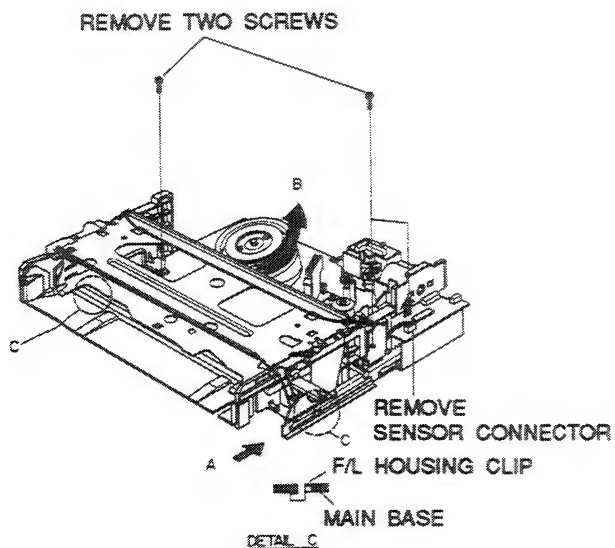


Fig. 12 Housing Assembly Removal

2-2-2. PWB Sensor (S) Assembly Removal

1. Push the wire toward A,B arrows and then remove it.
2. Push apart clips as shown in C direction and remove P.C.B.

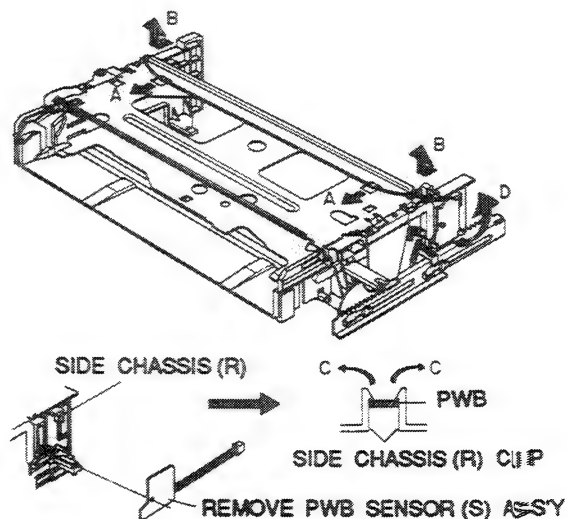


Fig. 13 PWB Sensor (S) Assembly Removal

2-2-3. PWB Sensor (E) Assembly Removal

1. Push apart clips as show in direction A and remove P.C.B in direction C.

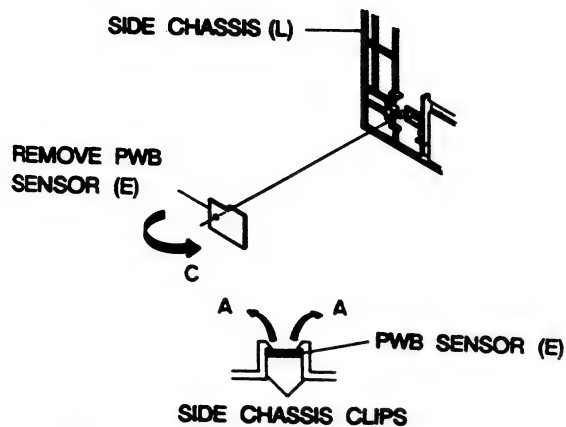


Fig. 14 PWB Sensor (E) Assembly Removal

2-2-4. Sub Assembly Removal

1. Remove two (2) screws holding the upper chassis and remove the ground plate top.
2. Lift the upper chassis toward A.
3. Lift the assembly cassette holder toward E.
4. Push the eject slide toward E to the end, lift it in the direction of arrow C.
5. Release clip on right side of chassis in direction D and remove the Joint Gear.

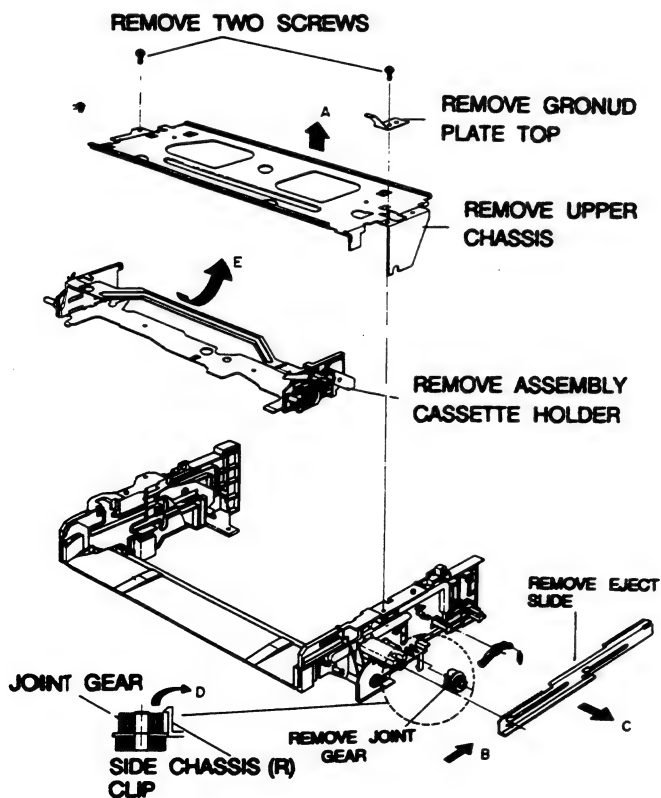


Fig. 15 Sub Assembly Removal

2-2-5. Side Arm Assembly Removal

1. Release the clip as shown in A.
2. Lift chassis right as shown in C.
3. Release the clip as shown in D.
4. Release the clip on left chassis, same as in step 2.
5. Remove left side chassis as shown in F.

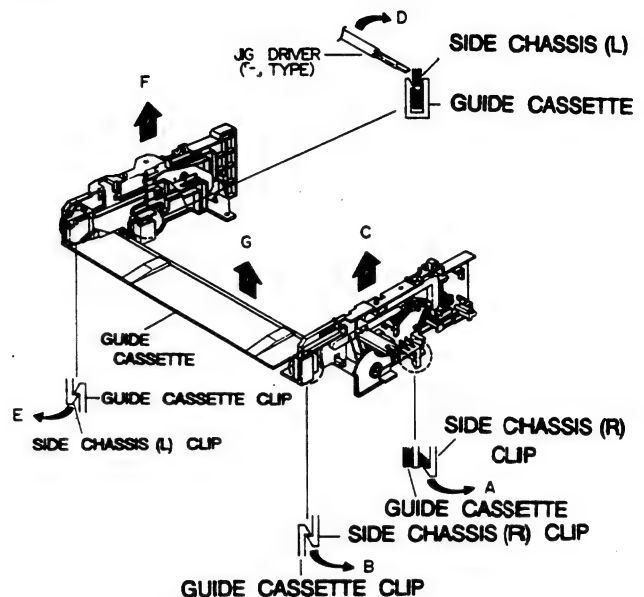


Fig. 16 Side Arm Assembly Removal

2-2-6. Arm Gear Removal

1. Remove eject spring by prying out center.
2. Remove spring tension arm (R) from the hook of side arm (R).
3. Remove the arm gear.

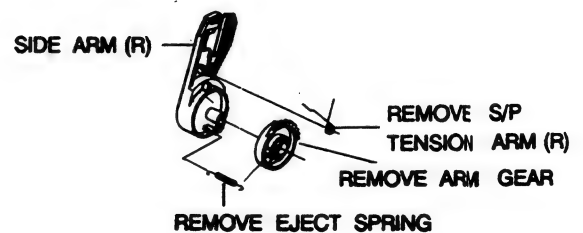


Fig. 17 Arm Gear Removal

2-2-7. Cassette Holder Assembly Removal

1. Remove the spring the holder L/R and lever LID L/R and remove the lever LID.
2. Remove the key cassette from the side holder (R) and remove the spring key cassette from the key cassette.
3. Lift the plate cassette upper toward A after taking off the hook of side holder L/R.
4. Lift up the side holder L/R from the cassette holder.

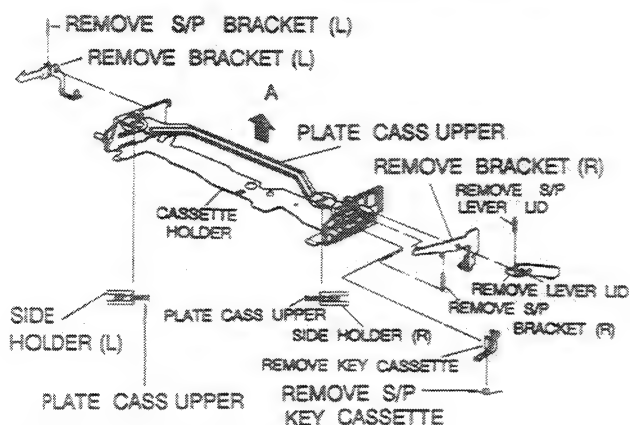


Fig. 18 Cassette Holder Assembly Removal

2-2-8. Side Chassis (L) Assembly Removal

1. Release light shutter spring from side chassis.
2. Remove light shutter after releasing tab as shown in A.
3. Lift up the earth plate to remove.
4. Remove the mask cam lever in the direction of arrow B from the side chassis (L).

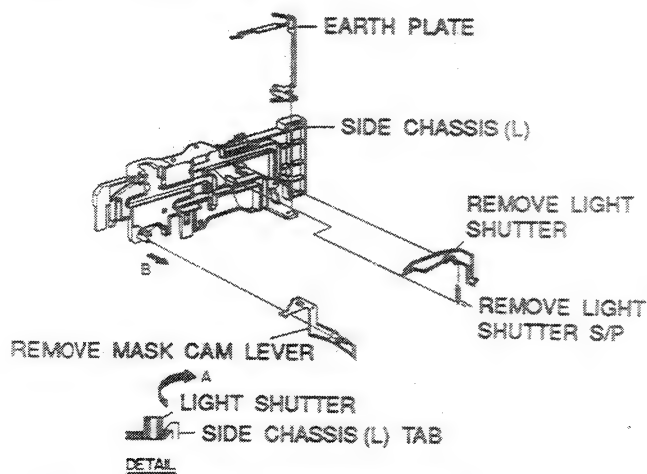


Fig. 19 Side Chassis (L) Assembly Removal

Note: To re-assemble reverse procedure

2-2-9. Joint Gear, Arm Gear and Eject Slide Assembly

1. Assemble the assembly point of the joint gear and the arm gear.
2. Assemble the joint gear with the eject slide as Fig. 20.

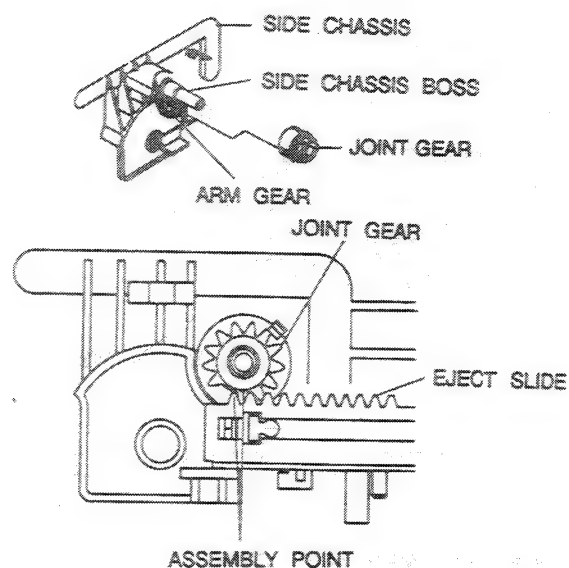


Fig. 20 Joint Gear, Arm Gear and Eject Slide Assembly

2-2-10. Deck Assembly and Assembly of F/L Housing Assembly

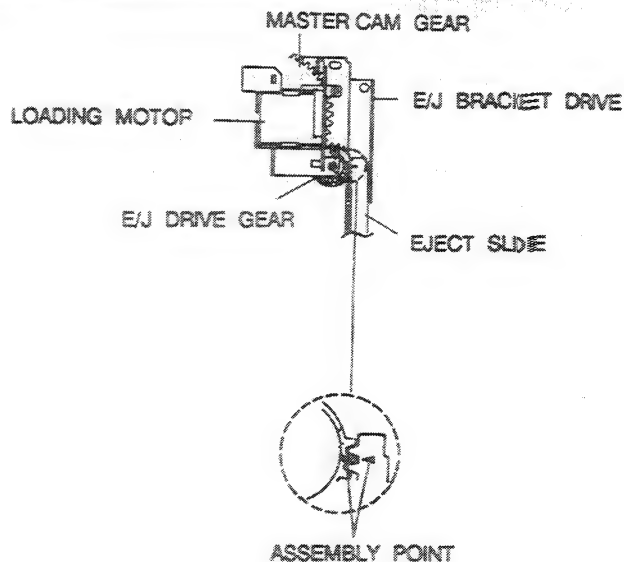
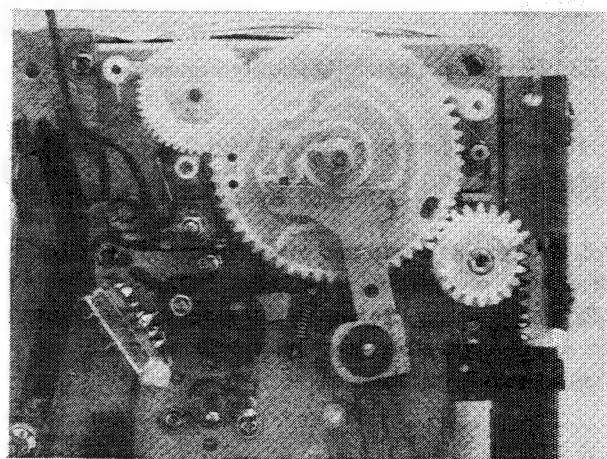


Fig. 21 Housing Assembly Point

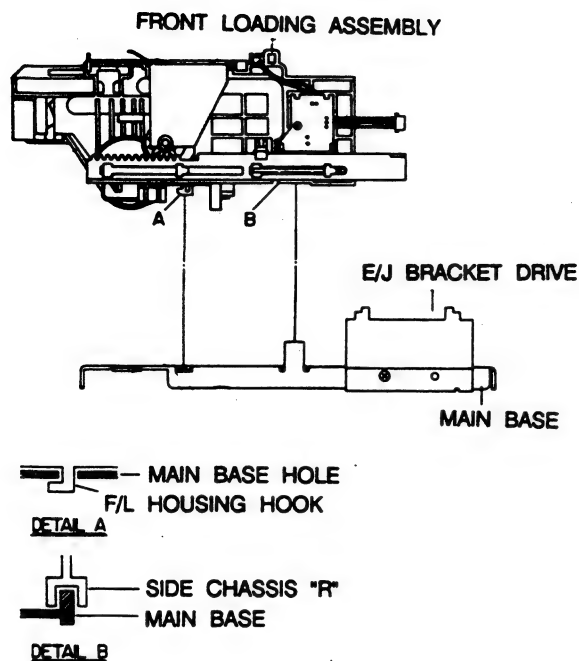


Fig. 22 Mechanism Chassis Assembly Removal

Note : Perform this procedure with mechanism in the eject position.

1. Pull the eject slide gear and assemble the point of E/J Drive Gear and E/J Slide Gear. (Fig. 21)
2. While holding cassette holder in the eject position, align the A and B assembly points as shown in Fig. 22.
3. Tighten two (2) screws.

Note : Recheck A and B position after reinstallation, if incorrect repeat above.

* Operating the VCR without Housing Assembly

1. Connect a jumper to short circuit momentarily between pin 1 (ground) and pin 3 (start sensor) of CN6202 on DECK JOINT.
2. After loading, function key is available to be used to select desired mode.

* Operating the VCR without inserting a cassette tape.

1. Remove the Housing upper chassis.
2. Push the cassette holder, while hiding the both sensors of LED IR.
3. After loading, function key is available to be used.

2-2-11. Cylinder Assembly Removal

CAUTION : Take extreme care when removing the upper cylinder. Do not touch the video head tips located at the upper cylinder during servicing.

Follow the Procedure for Removing

1. Remove the top cover. (See Fig. 1)
2. Remove the bottom cover. (See Fig. 2)
3. Remove the cylinder ass'y from the main base.
4. Remove two (2) screws from the upper cylinder ass'y.
5. Unsolder PWB-Upper cylinder and then lift upper cylinder.
6. Remove screw from lower cylinder and detach TR holder ass'y.
7. Remove two (2) screws from the motor rotor, then remove it.
8. Remove three (3) screws from the motor stator and remove it.

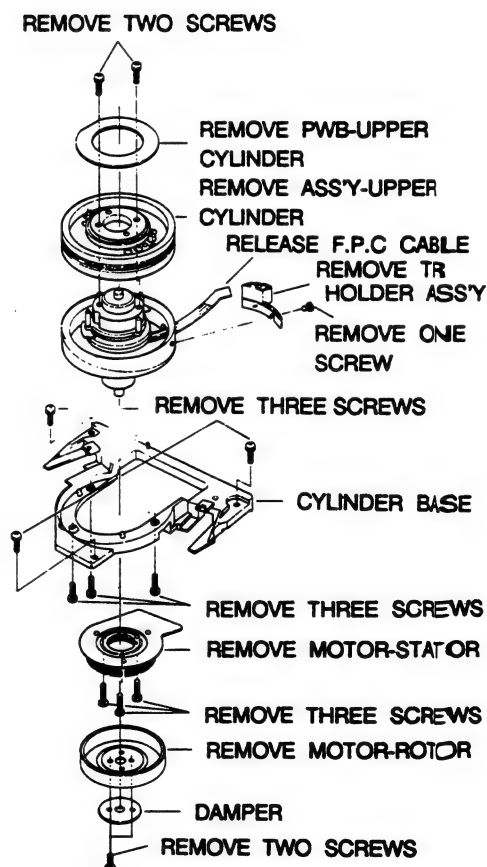


Fig. 23 Cylinder Assembly Removal

2-2-12. Upper Cylinder Removal

1. Unsolder the PWB upper cylinder from the upper cylinder ass'y.
2. Remove two (2) screws from the upper cylinder ass'y and remove it.

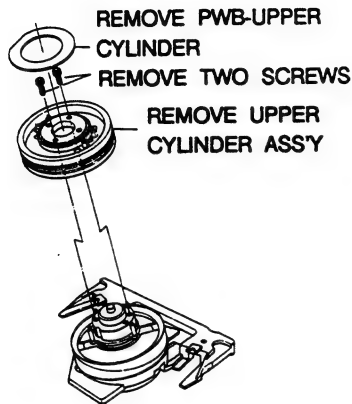


Fig. 24 Upper Cylinder Removal

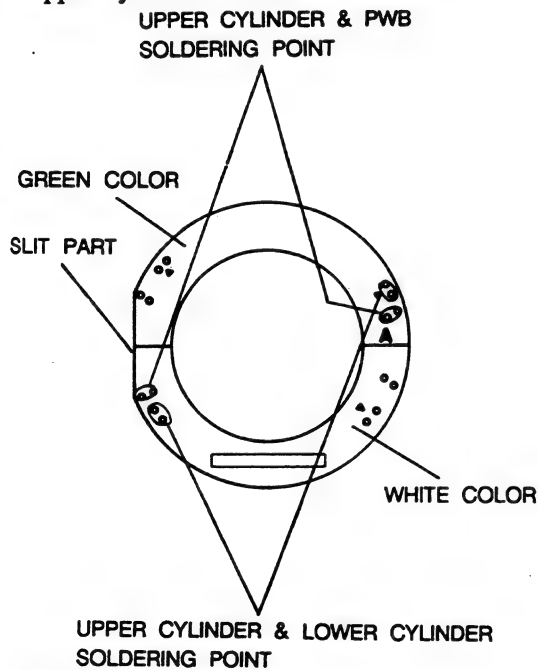


Fig. 25 PWB Upper Cylinder

* Upper Cylinder Assembly

1. Fix the slit part of upper cylinder PWB to CH1 head tip of PCB (green) on bottom side. (Fig. 26)
2. Fix the CH1 head tip (green) on bottom side of upper cylinder ass'y to the green PCB of lower cylinder ass'y (Fig. 27) and then solder it.
3. Tighten two (2) screws.

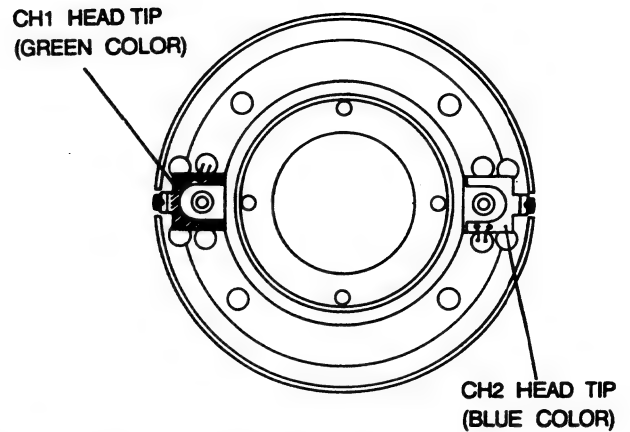


Fig. 26 Upper Cylinder Bottom View

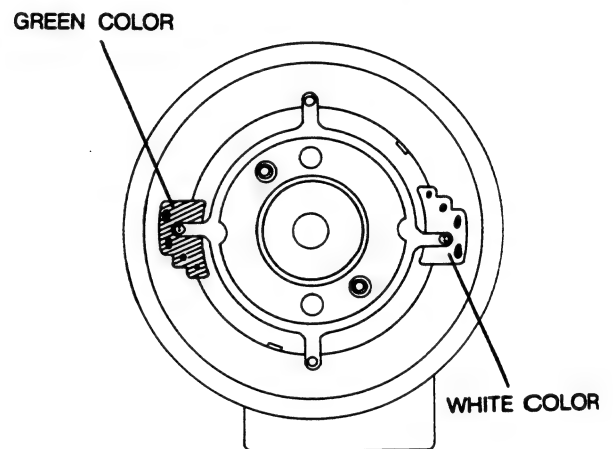


Fig. 27 Lower Cylinder Top View

2-2-13. Lower Cylinder Removal

1. Lift up the lower cylinder from the cylinder base.

Note : Align cylinder base pin before reinstalling.

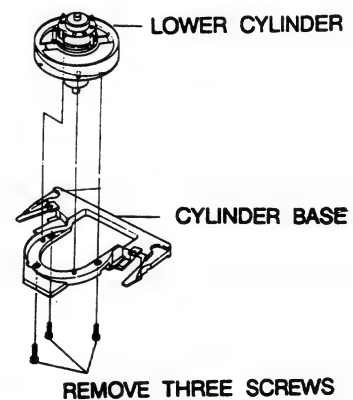


Fig. 28 Lower Cylinder Removal

2-2-14. Cylinder Motor Removal

1. Remove two (2) screws from the motor rotor, then remove rotor.

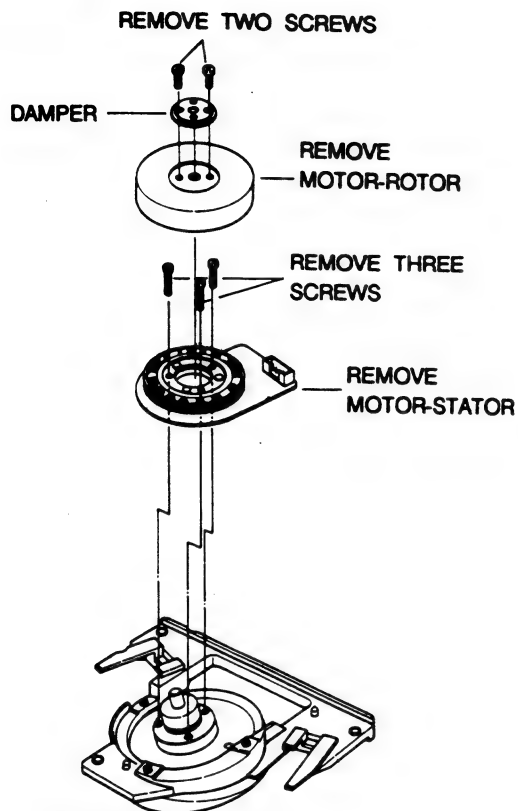


Fig. 29 Cylinder Motor Removal

Note : Mark rotor position to insure correct phase orientation upon reinstallation.

2. Remove three (3) screws from the motor stator and remove it from the lower cylinder.

* Motor rotor Assembly

1. Tighten 2 screws while fixing the hole of cylinder bush and rotor (Fig. 30)

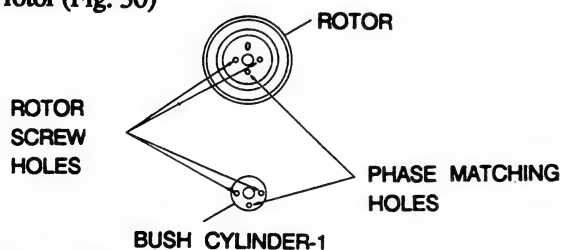


Fig. 30 Motor Rotor Assembly

2-2-15. Cylinder Assembly Removal from Main Base

1. Remove three (3) screws securing the cylinder base and main base.
2. Lift the cylinder base to remove.

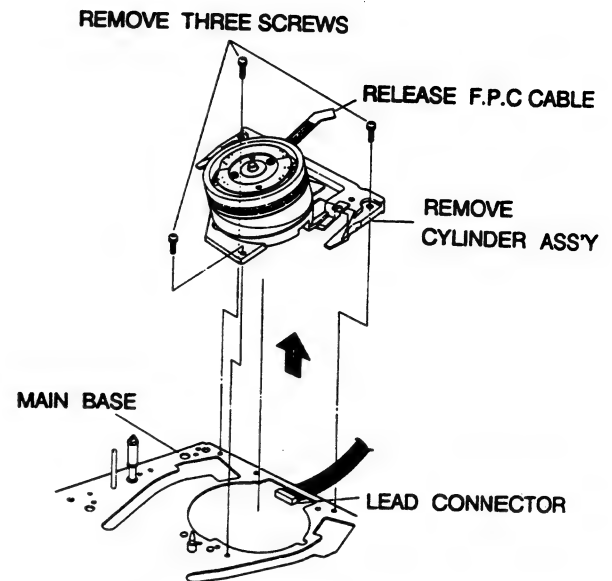


Fig. 31 Cylinder Assembly Removal

2-2-16. Loading Assembly and E/J Drive Bracket Removal

1. Remove the top cabinet. (See Fig. 1)
2. Remove the screw from the PWB joint, and then lift up the PWB joint.
3. Remove three (3) screws of loading unit assembly.
4. Lift up the loading unit assembly
5. Remove two (2) screws securing eject drive bracket from the side of main base.
6. Lift to remove.

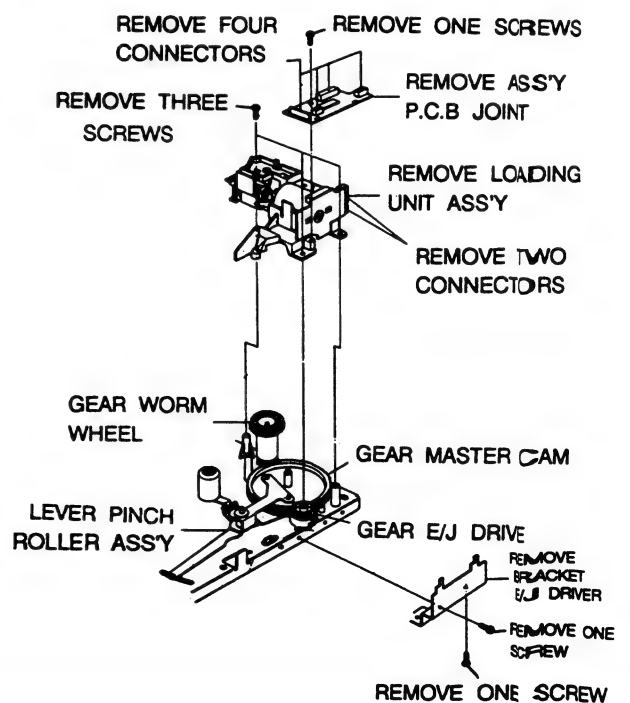


Fig. 32 Loading Assembly and E/J Drive Bracket Removal

2-2-17. Brake Lever Cam Assembly Removal

1. Remove the slit washer from pinch roller stud.
2. Lift up the brake lever cam assembly.

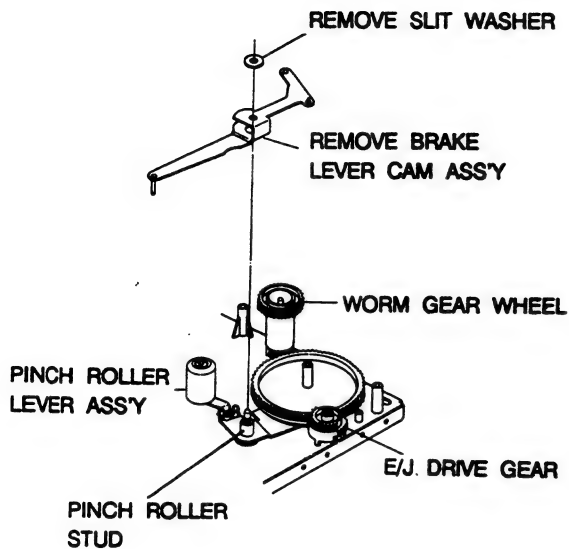


Fig. 33 Brake Lever Cam Assembly Removal

2-2-18. Worm Gear Wheel, Master Cam and Eject Drive Gear Removal

1. Lift up the worm gear wheel.
2. Lift up the eject drive gear.
3. Lift up the master cam gear.

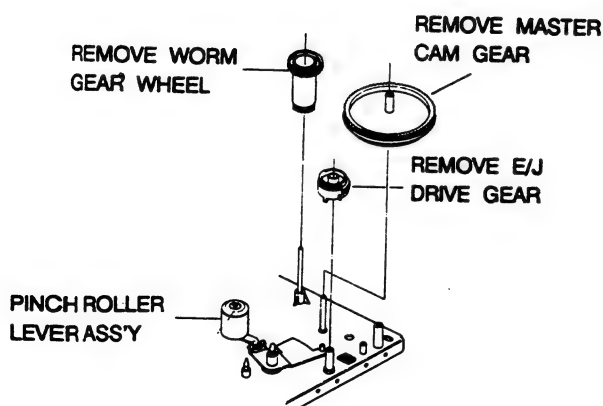


Fig. 34 Worm Gear Wheel, Master Cam and Eject Drive Gear Removal.

2-2-19. Pinch Roller Lever Assembly Removal

1. Lift up the pinch roller assembly.
2. Remove the spring pinch roller.

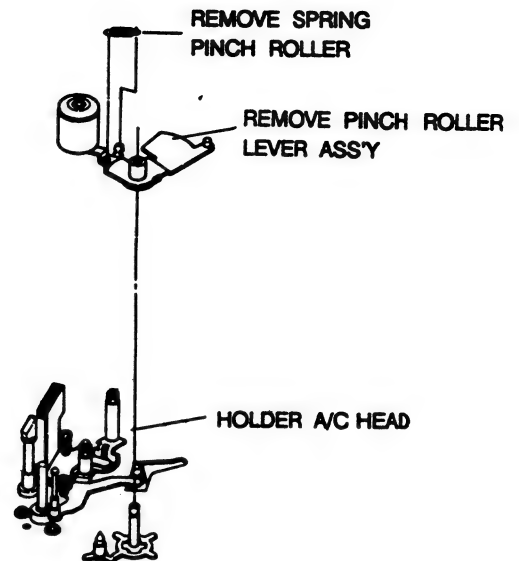


Fig. 35 Pinch Roller Lever Assembly Removal

2-2-20. Sector Gear Removal

1. Remove two (2) slit washers securing sector gear stud and loading gear "R" from the bottom side of main base.
2. Place loading gears in eject position. Lift up the sector gear.

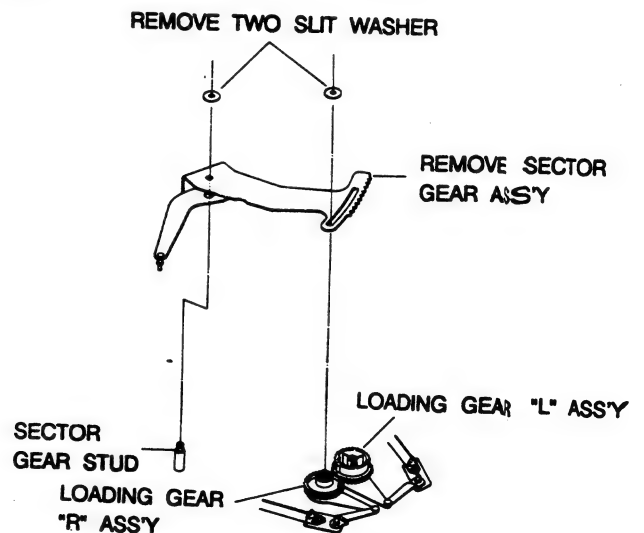


Fig. 36 Sector Gear Removal

2-2-21. Loading Gear L/R Removal

1. Release the tab securing the loading gear ass'y. to the loading gear arm from the bottom.
2. Lift up the loading gear L/R to remove.

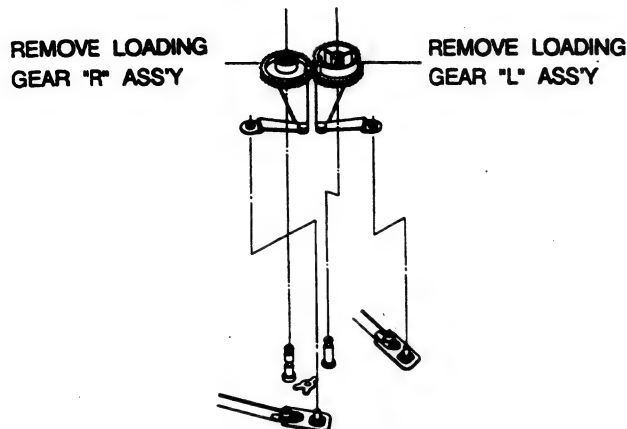


Fig. 37 Loading Gear L/R Removal

2-2-22. Reel Disk "R" Removal

1. Release locking tab on the beneath of the sub brake "R".
2. Remove the sub brake "R".
3. Remove the slit washer.
4. Lift up the reel disk.
5. Remove the plain washer.

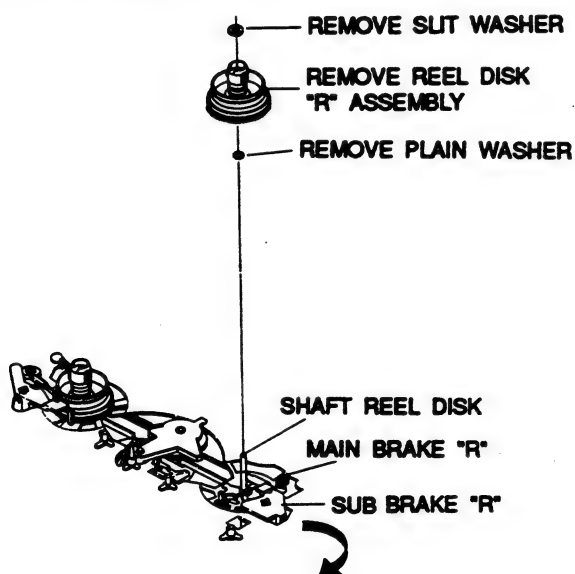


Fig. 38 Reel Disk "R" Removal

2-2-23. Reel Disk "L" Tension Band & Tension Arm Removal

1. Take off the tension arm spring.
2. Align tension arm adjustment with slot in the tension band, the pull up to remove.

3. Release two tabs on tension arm.
4. Remove the tension band.
5. Remove slit washer.
6. Lift up the reel disk "L" after removing the sub brake "L" in the direction of arrow.
7. Remove the plain washer.

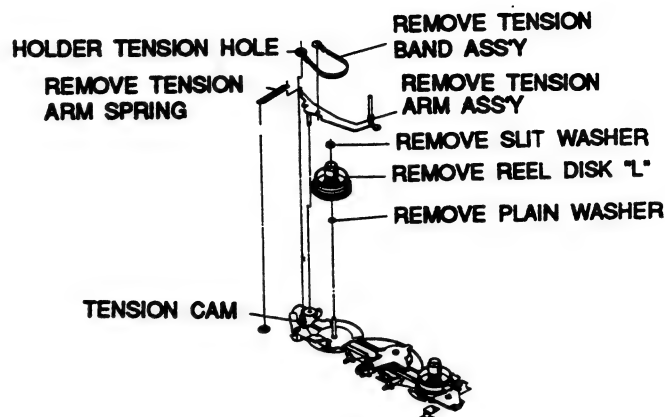


Fig. 39 Reel Disk "L" Tension Band & Tension Arm Removal

2-2-24. Sub Brake L/R Removal

1. Remove the sub brake spring "L". (Refer to the main brake slide removal)
2. Remove the sub brake spring "R". (Refer to the main brake slide removal)
3. Release tab from beneath chassis. Lift up the sub brake L/R.

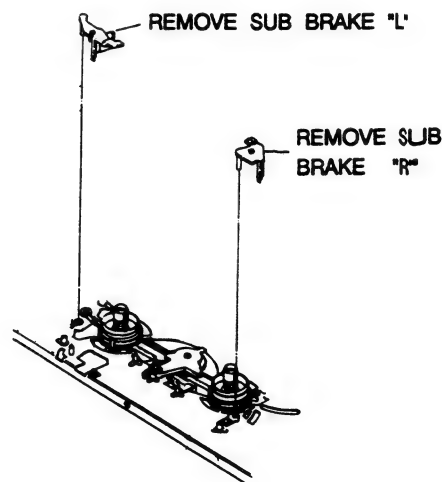


Fig. 40 Sub Brake L/R Removal

2-2-25. Main Brake L/R and Tension Lever Control Removal

1. Remove capstan belt.
2. Remove slit washer securing clutch ass'y.
3. Release main slide yellow spring by unhooking from supply reel tab.
4. Release four (4) tabs and remove main slide.
5. Release tab and remove the tension lever control. Refer to Fig. 41.
6. Release tab and remove main brake left/right.

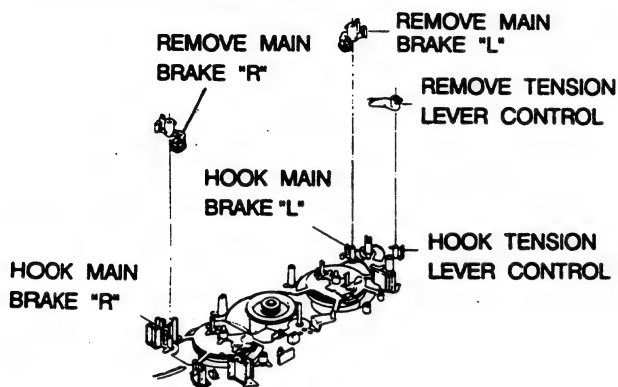


Fig. 41 Main Brake L/R and Tension Lever Control Removal

2-2-26. Capstan Motor and Capstan Motor Brake Removal

1. Remove the D.D capstan brake spring. Turn assembly to release tab.
2. Lift up the D.D capstan brake to remove.
3. Remove capstan cable from PCB.
4. Remove three (3) screws holding the capstan motor from the main base.
5. Remove the capstan motor belt from the capstan motor pulley and the clutch ass'y. Remove motor.

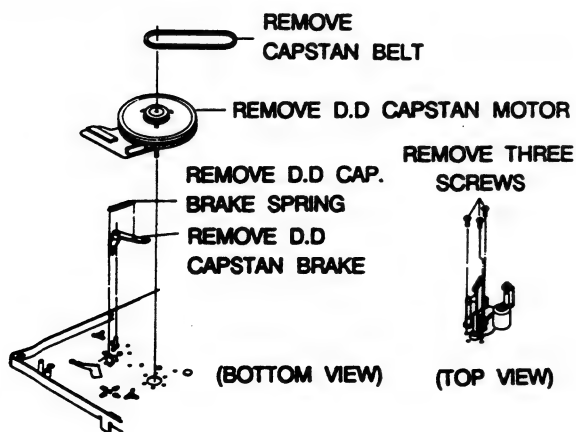


Fig. 42 Capstan Motor and Capstan Motor Brake Removal

2-2-27. Idler Clutch and Shift Lever Removal

1. Remove the slit washer.
2. Remove the clutch assembly.
3. Pull the shift lever toward vertical, push forward chassis back, then up to remove.

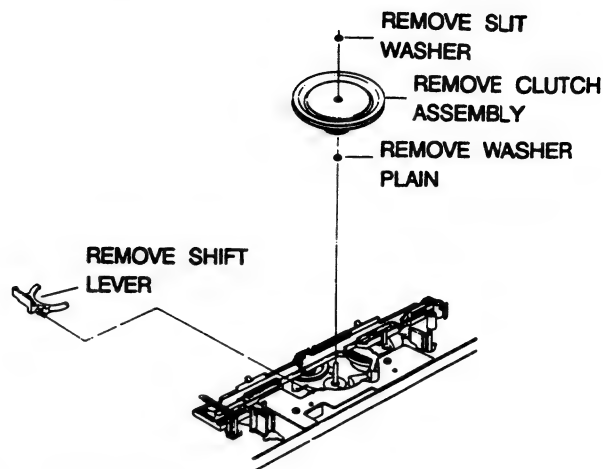


Fig. 43 Idler Clutch and Shift Lever Removal

2-2-28. Main Brake Slide Removal

1. Remove the sub "L" spring.
2. Remove the main slide spring from supply reel tab.
3. Lift up the main brake slide after releasing the securing tabs.
4. Remove the idler shift spring after releasing the securing tabs.

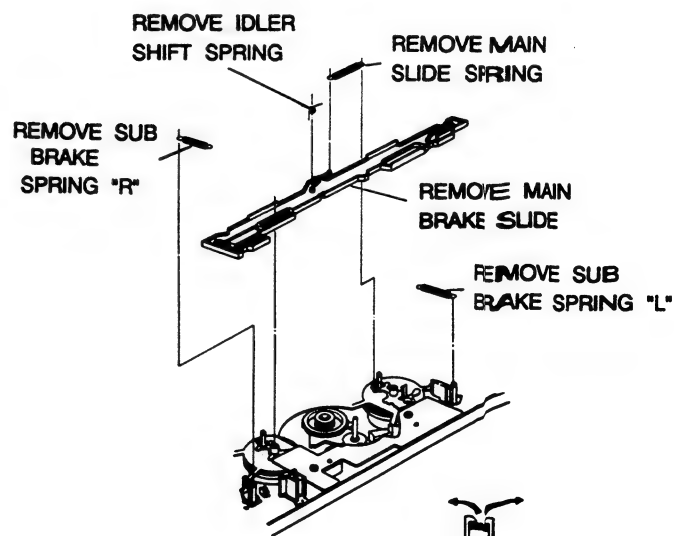


Fig. 44 Main Brake Slide Removal

2-2-29. PWB Reel Removal

1. Disconnect the lead connector assembly.
2. Remove two (2) screws.
3. Lift up the PWB reel.

Note : When reinstalling PWB, pull REC safety switch arm back.

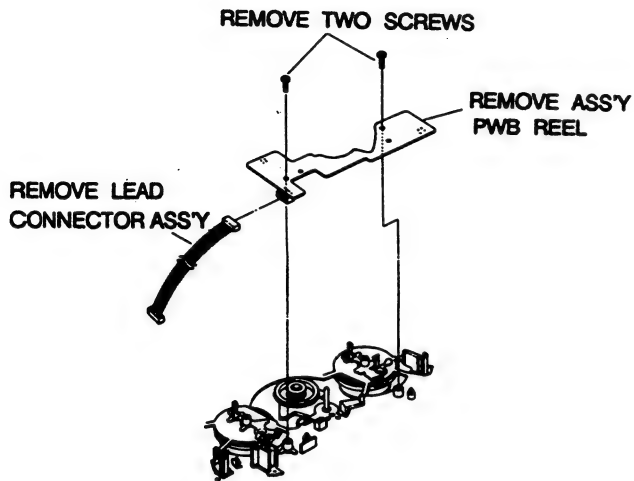


Fig. 45 PWB Reel Removal

2-2-30. Idler Sub Assembly Removal

1. Remove the slit washer.
2. Lift up the idler sub assembly.

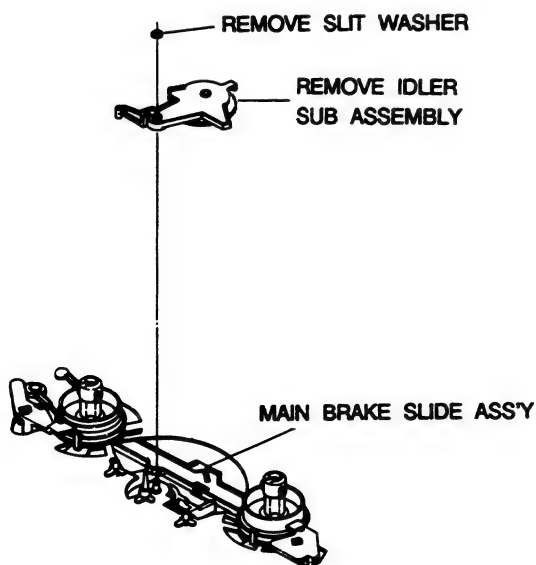


Fig. 46 Idler Sub Assembly Removal

2-2-31. Assembly LED Removal

1. Disconnect the lead connector assembly.
2. Remove one(1) screw.
3. Lift up the LED holder.

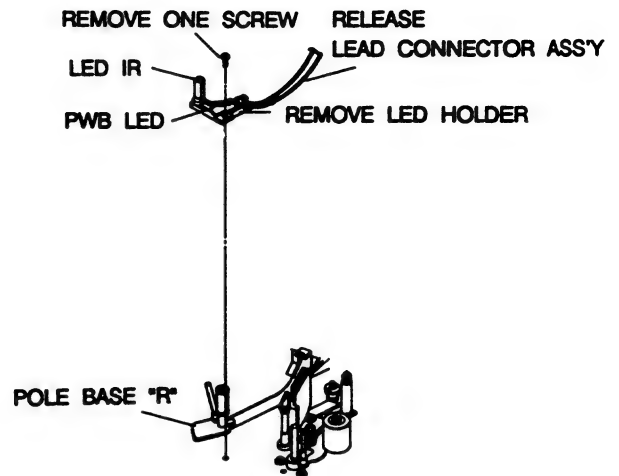


Fig. 47 Assembly LED Removal

2-2-32. Worm Gear Positioning (Eject Mode)

- * Assemble in the eject mode, rotate worm gear full counter clockwise.

2-2-33. Pinch Roller Assembly and Master Cam Gear Assembly

1. Fasten pinch roller ass'y to pinch roller stud.
2. Reinstall master cam gear with pinch roller ass'y. in the eject mode. Refer to Fig. 48.

Note : Align the assembly pin with the Master Cam gear alignment hole.

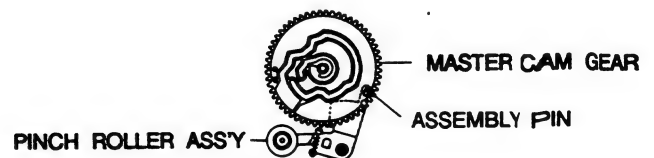


Fig. 48 Pinch Roller Assembly and Master Cam Gear Assembly

2-2-34. Brake Cam Lever, Eject Drive Gear and Master Cam Gear Assembly

1. Assemble the brake cam ass'y. on the pinch lever stud as in Fig. 49.
2. Assemble master cam gear with the brake cam lever ass'y. in eject mode.
3. Assemble gear E/J (eject) drive to stud as shown in Fig. 49, secure with slit washer.

Note: Align arrows on master cam & eject drive gear.

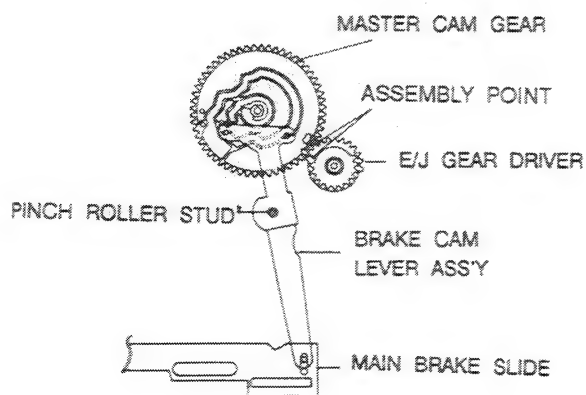
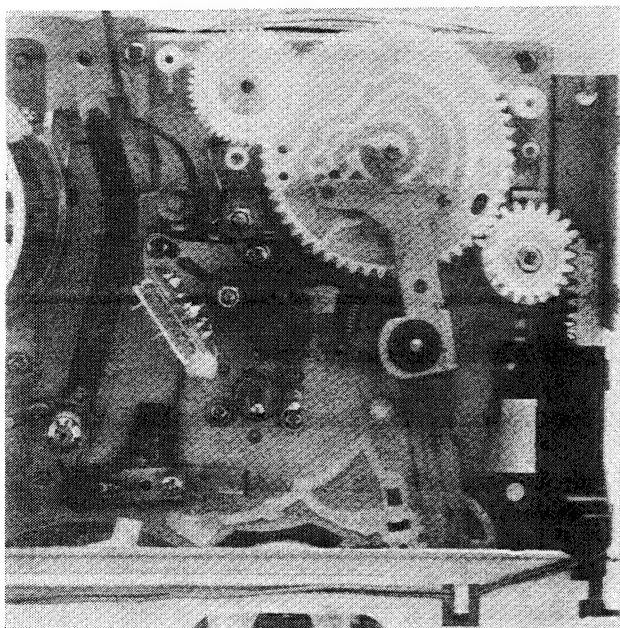


Fig. 49 Brake Cam Lever, Eject Drive Gear and Master Cam Gear Assembly

2-2-35. Ass'y Loading Unit and Master Cam Gear Assembly

1. Align master cam hole with chassis hole.
2. Align program switch arrows, push brake tension lever to align tracking pin as shown in Fig. 50.
3. Align master cam & eject drive gear arrows.
4. Reinstall loading gear ass'y.

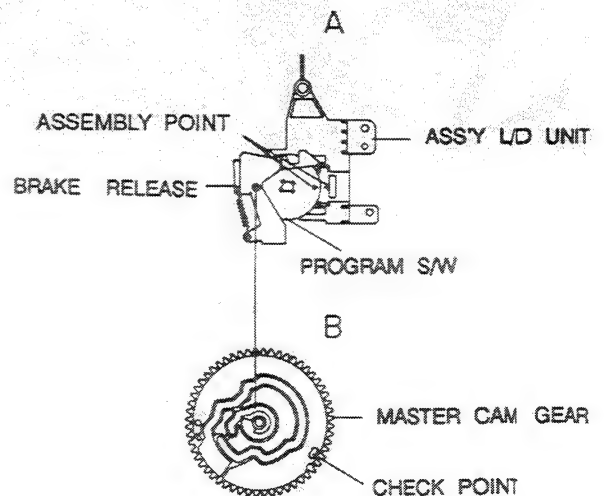
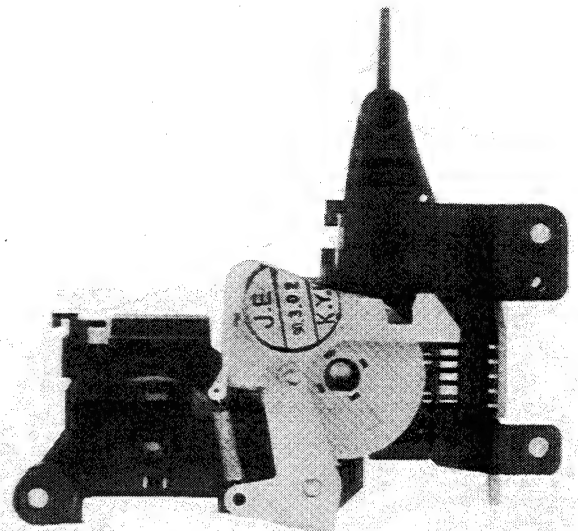


Fig. 50 Ass'y Loading Unit Master Cam Gear Assembly

2-2-36. Sector Gear and Loading Gear Assembly

1. Reinstall the loading gear L/R assemblies in the eject mode while align the timing marks (Fig. 51).
2. Install sector gear and align with timing mark on the supply side loading gear (Fig. 52).
3. Secure with slit washers.

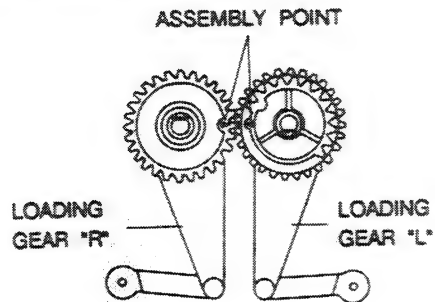


Fig. 51 Loading Gear L/R Assembly Point

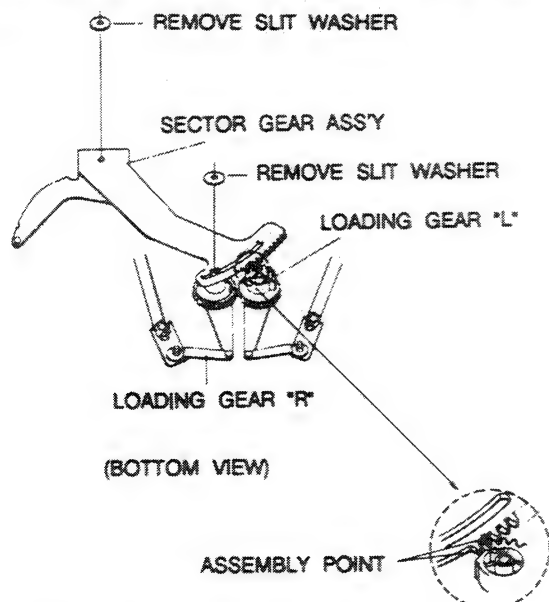
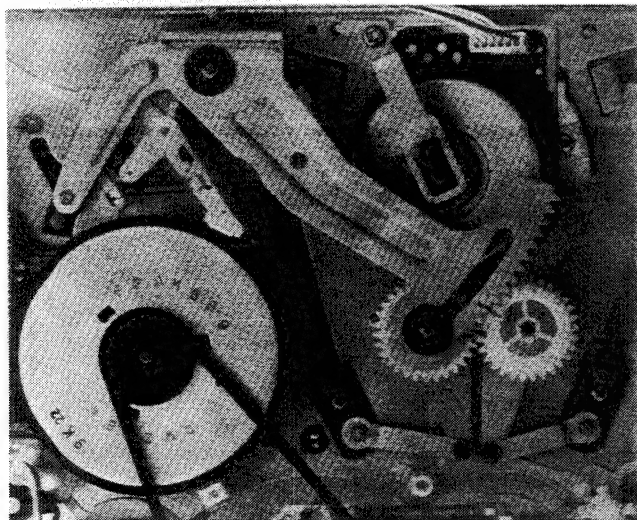


Fig. 52 Sector Gear and Loading Gear Assembly

2-2-37. Pole Base Removal

1. Loosen one (1) screw from bottom of pole base.
2. Slide and remove retainer clips.
3. Remove pole base ass'y.
4. Install in reverse order.

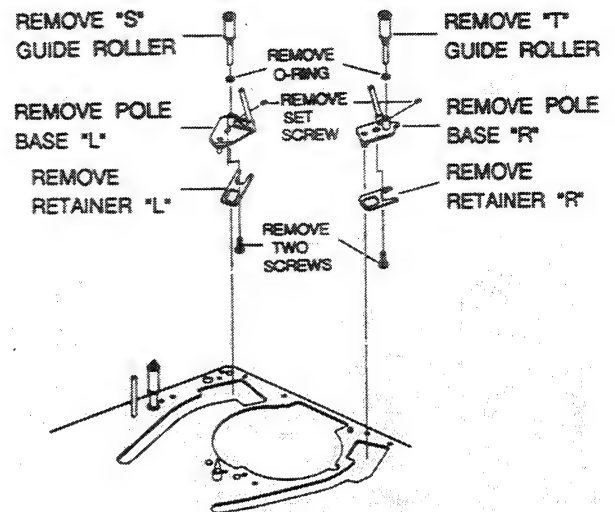


Fig. 53 Pole Base Removal

2-2-38. Audio Control Head Assembly Removal

1. Remove the nylon nut holding A/C head stud.
2. Remove three (3) screws and spring.
3. Lift up the A/C head assembly.
4. Remove A/C head holder from the stud.
5. Lift up the spring torsion A/C.

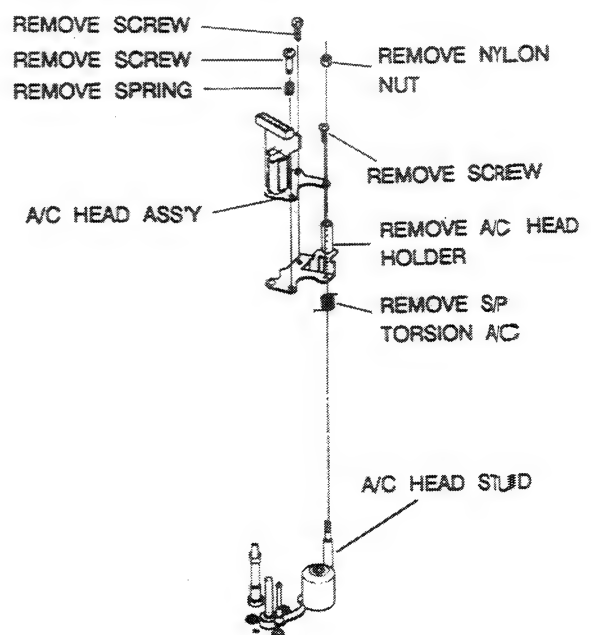


Fig. 54 Audio Control Head Assembly Removal

2-2-39. Review Arm Assembly Removal

1. Remove the nylon nut holding the review arm stud.
2. Lift up the washer plain.
3. Lift up the review arm assembly.
4. Remove the review arm spring.

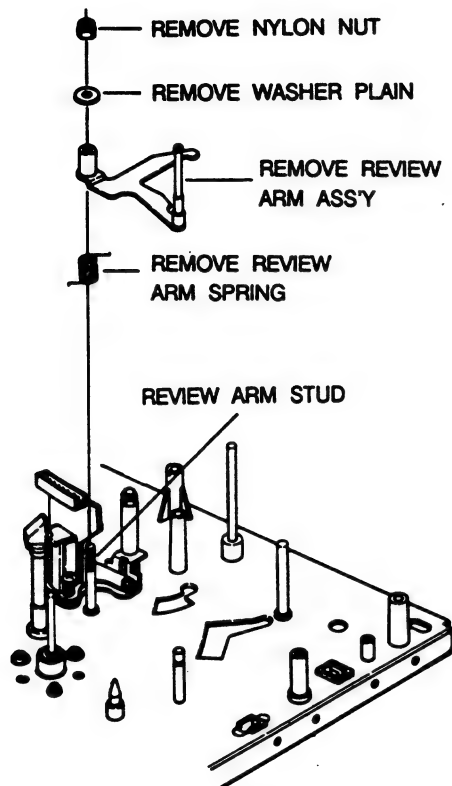


Fig. 55 Review Arm Assembly Removal

2-2-40. Dummy Head Removal

1. Remove the screw holding th Dummy Head and the main base.
2. Lift up the Dummy Head.

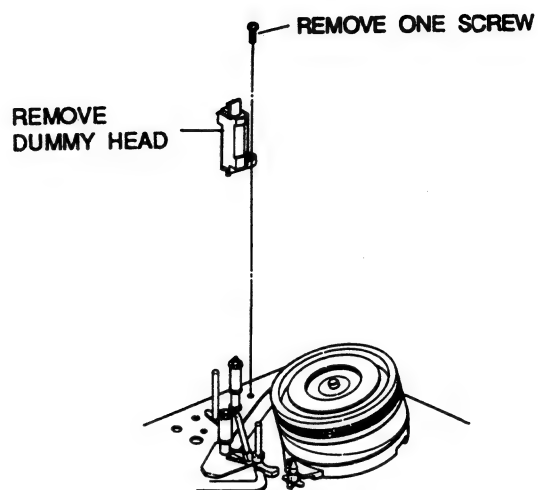


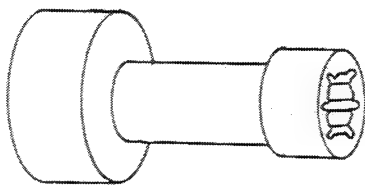
Fig. 56 Dummy Head Removal

3. MECHANICAL ADJUSTMENT

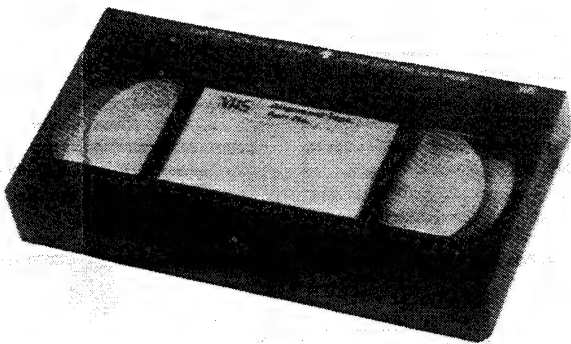
3-1. MECHANICAL ADJUSTMENT TOOLS

NO	JIG ITEM	CODE NO.	SPECIFICATION	DESCRIPTION	SKETCH NO.
1	TORQUE HEAD GAUGE	68140-100-100	COMMON ; LONG	; Use for torque adjustment of Take up / Supply Reel.	A
2	ALIGNMENT TAPE	68140-100-207 68140-100-208 68140-100-209 68140-100-210 68140-100-211	PAL ; SR 1-2 PAL ; SR 2-2 PAL ; SVJ -2 PAL ; SHR 2 -2 PAL ; SHVJ -2	; LION PATTERN ; 6KHz ; COLOUR BAR ; 1KHz ; PROGRAMME (MONO) ; COLOUR BAR (Hi-Fi) ; L-1KHz, R-400Hz ; PROGRAMME (Hi-Fi)	B
3	BACK TENSION CASSETTE TAPE	68140-100-105	COMMON	; Use for back tension adjustment of Supply reel.	C
4	MASTER PLANE AND REEL DISK HEIGHT JIG	68140-110-101	G-10	; Use for height Adjustment of Reel Disk and Deck plate.	D
5	SERVICE JIG KIT	68140-100-301	UPPER DRUM REPLACING JIG	Use for upper drum replacement.	E(A)
			DRIVER HANDLE	Use for connection with each driver.	E(B)
			CAP.ADJ. DRIVER	; Use for CAP nut Adjustment and X-position Adjustment with A/C Head movement.	E(C)
			(+) (-) DRIVER	; Use for screw Adjustment and Audio Azimuth Adjustment.	E(D-G)
			N3 BOX DRIVER	; Use for A/C Head or Roller supply review arm replacement and Tape transport Adjustment.	E(H)
			HEX WRENCH (0.9mm) HEX WRENCH (1.5mm) HEX WRENCH (2.0mm)	; Use for Guide Roller set screw fastening. ; Use for AudioAzimuth Adjustment (Differ from item) ; Use for Drum bush and driver replacement.	E(I)
			CERAMIC DRIVER	; Use for Electrical Adjustment.	E(J)
			HOUSING ASSEMBLING JIG	; Use for Housing Assembly. (Refer to service manual for further information)	E(K)
			TRANSPORT MECHANISM ADJUSTING DRIVER	; Use for height adjustment of Guide Roller for Envelope linearity adjustment.	E(L)

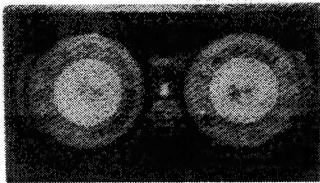
A : TORQUE HEAD GAUGE



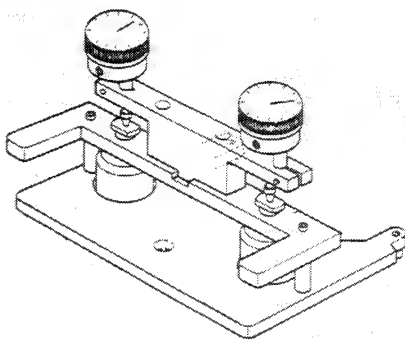
B : ALIGNMENT TAPE



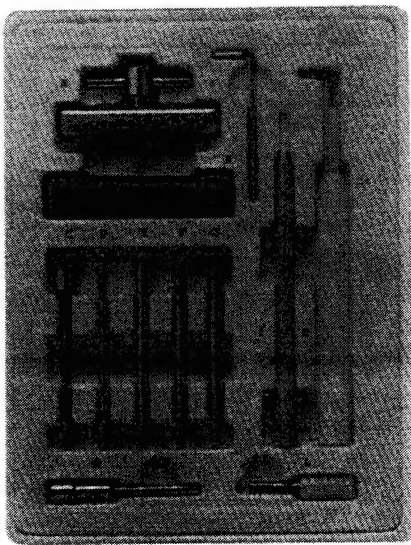
C : BACK TENSION CASSETTE TAPE



D : MASTER PLANE AND REEL DISK HEIGHT JIG



E : SERVICE JIG KIT



(A) UPPER DRUM REPLACING JIG

(B) DRIVER HANDLE

(C) CAP.ADJ.DRIVER

(D-G) (+) (-) DRIVER

(H) N3 BOX DRIVER

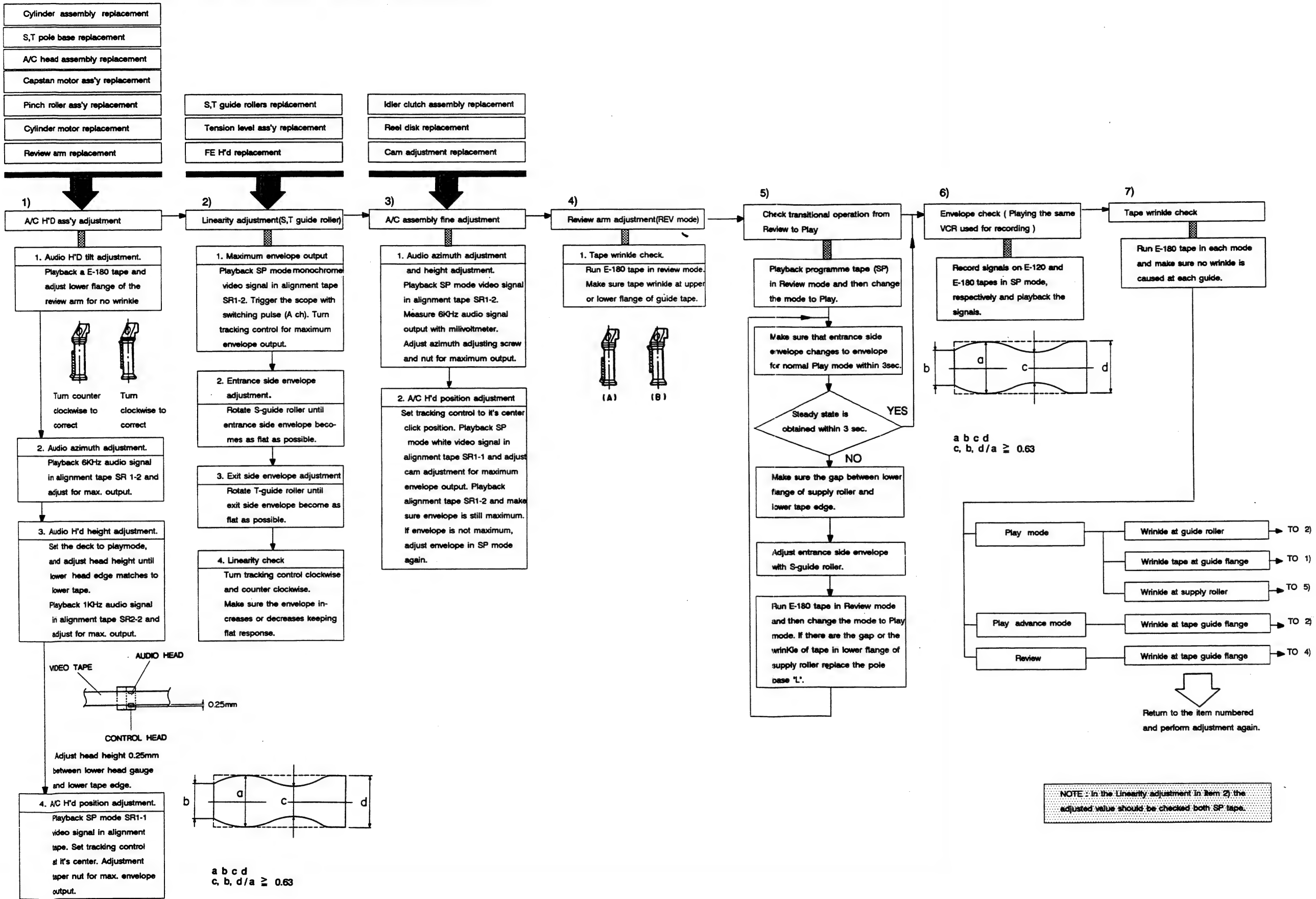
(I) HEX WRENCH (0.9mm)
HEX WRENCH (1.5mm)
HEX WRENCH (2.0mm)

(J) CERAMIC DRIVER

(K) HOUSING ASSEMBLING JIG

(L) TRANSPORT MECHANISM
ADJUSTING DRIVER

3-2. TAPE TRANSPORT SYSTEM ADJUSTMENT FLOW CHART



3-3. TAPE TRANSPORT SYSTEM

Note :

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the followings :

- * Noises observed on the screen.
- * Tape damage.
- * Parts replacement in the tape transport system.

3-3-1. Location of tape transport adjustment (Adjustment reference)

Lower flange height of tape guide is used as the basic reference for the transport adjustment. To keep height of the tape guide, do not apply excessive force onto the main base to prevent deformation.

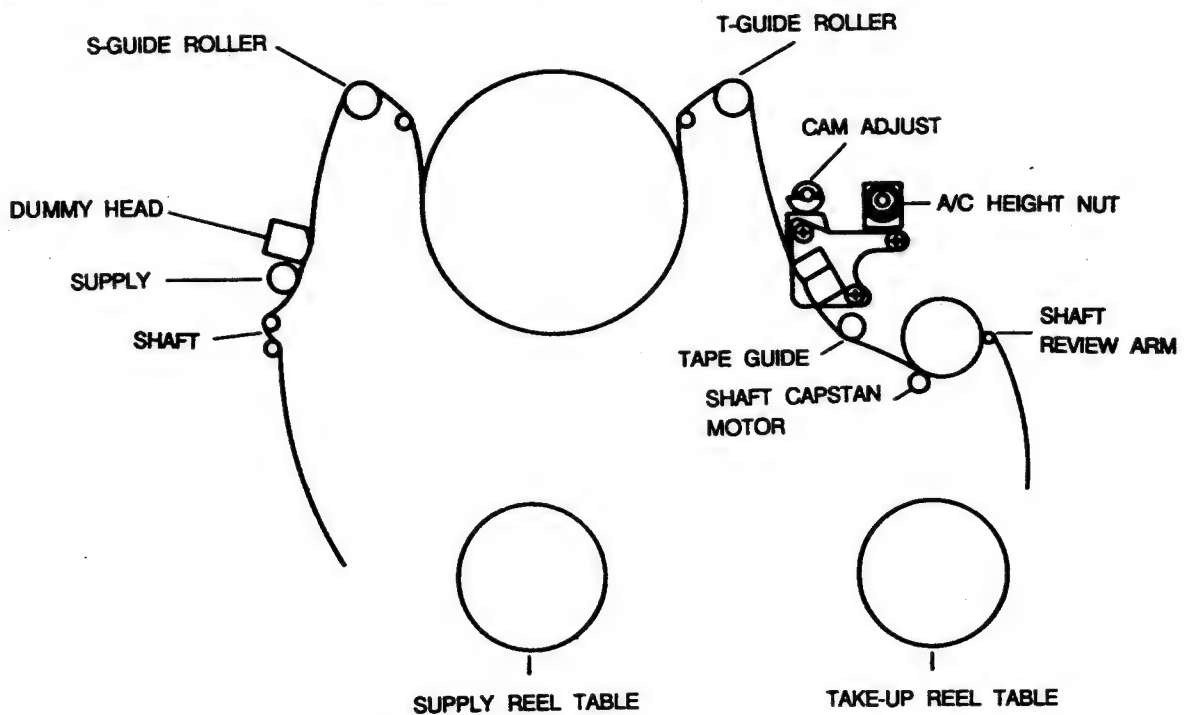


Fig. 1 Location of tape transport adjustment

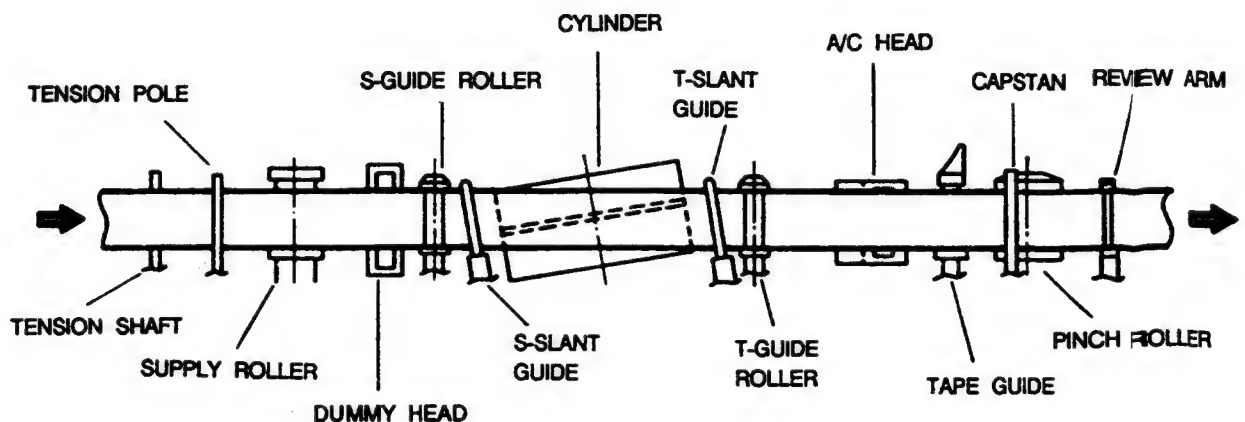


Fig. 2 Tape travel diagram

3-3-2. Tape transport system adjustment

1) Pre-adjustment

When the part (s) are replaced, perform required adjustments by referring to procedures for the tape transport system. When the part (s) are replaced, the tape path may be changed.

First run an E-180 tape and make sure excessive tape wrinkle does not occur at each tape guide.

1. If tape wrinkle is observed at the S, T-guide rollers, turn the S, T-guide rollers until wrinkle disappears.
2. If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the A/C head.

2) Adjustment procedures

1. A/C Head Assembly Adjustment

a. A/C tilt adjustment

1. Playback an E-180 tape and observe running condition of the tape at the lower flange of tape guide.
2. Adjust the A/C tilt adjusting screw until tape wrinkle is caused at the lower flange of tape guide as shown in Fig. 3 (A).
3. Turn the A/C tilt adjusting screw counter clockwise until the tape travels along the lower flange as shown in Fig. 3 (B).

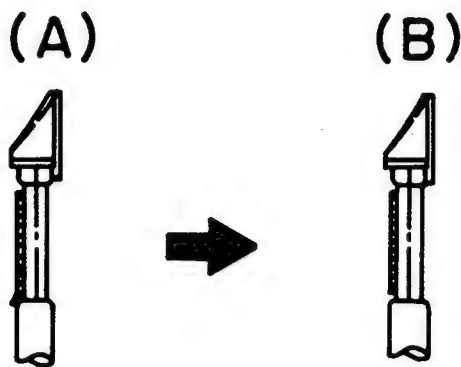


Fig. 3 Tape guide check

b. Audio Azimuth Adjustment

1. Load alignment tape (SR1-2 : 6KHz) and playback the 6KHz signal.
2. Connect channel-1 scope probe to TP501.
3. Adjust screw (B) vertically, to achieve maximum audio level.
4. Adjust screw (C) and hex nut to achieve maximum audio level.

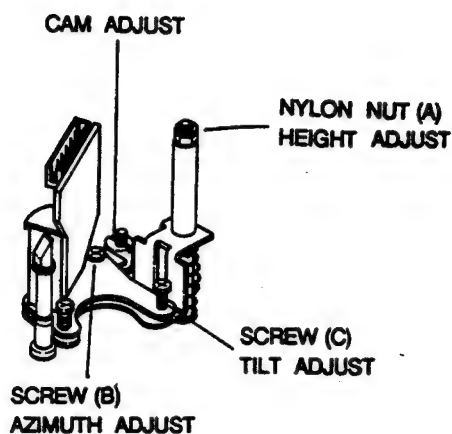


Fig. 4 A/C head assembly

c. Audio head height adjustment

1. Run the alignment tape SR2-2 in the playback mode.
2. Observe surface of the audio head using a dental mirror.
3. Turn the A/C height adjusting nut until the gap of lower tape edge and the lower edge of the control head is about 0.25mm shown in Fig. 5.
4. Playback the 1KHz audio signal in the alignment tape and adjust the head height for maximum audio output.

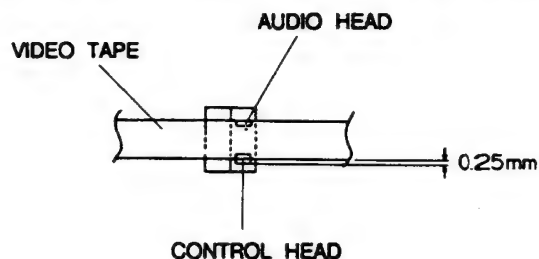


Fig. 5 Head Height

d. A/C Head Position Pre-adjustment

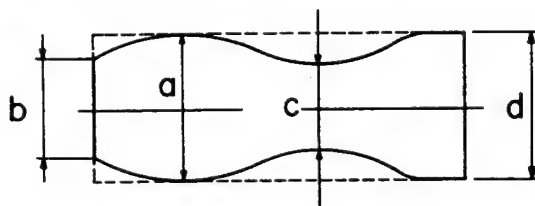
1. Playback the SP mode, video envelope on the SR1-2 alignment tape.
2. Adjust the CAM adjust for maximum video envelope output make sure tracking control is set at its center position.

2. Linearity adjustment (S, T-guide rollers adjustment)

1. Playback the mode, video envelope on the SR1-2 alignment tape.
2. Observe the video envelope signal on an oscilloscope triggered by the video switching pulse.
3. Make sure the video envelope waveform (in its maximum output) meets the specification shown in Fig. 6. If it is not, adjust as follows :

Note :

a=maximum output of the video RF envelope
b=minimum output of the video RF envelope at the entrance side
c=minimum output of the video RF envelope at the center point
d=minimum output of the video RF envelope at the exit side.



$$\frac{c, b, d}{a} \geq 0.63$$

Fig. 6 Envelope Waveform Adjustment

4. If the section A in Fig. 7 does not meet the specification, adjust the S-guide roller up or down.
5. If the section B in Fig. 7 does not meet the specification, adjust T-guide roller up or down.

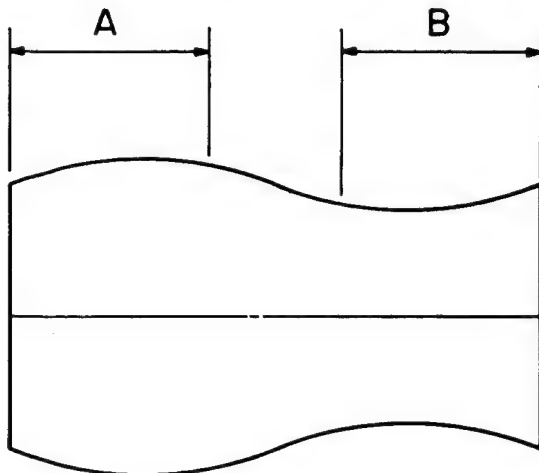


Fig. 7 Adjustment Points

6. After completion of the adjustment (s), vary tracking control from one end to the other and make sure video envelope variations are almost flat.
7. If the envelope varies as shown in Fig. 8 adjustment of the S, T-guide rollers may be upset, so perform the adjustment again.

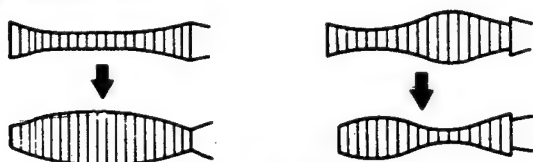


Fig. 8 Abnormal variation of the waveform

3. A/C Head Assembly Fine Adjustment

a. Tape wrinkle check at the lower flange of tape guide.

1. If tape wrinkle is observed at the lower flange of tape guide, adjust the A/C tilt adjusting screw counterclockwise as shown in Fig. 3 until the wrinkle disappears.
2. If a gap is observed between the lower flange of tape guide and the lower edge of tape, adjust the A/C tilt adjusting screw clockwise until the tape travels along the lower flange.

Note :

This adjustment should be done using a beginning part of E-180 tape.

b. Azimuth Adjustment

1. Playback the SP mode, 6KHz audio signal on the alignment tape SR1-2.
2. Adjust the A/C azimuth adjusting screw for maximum audio output as shown in Fig. 4.

c. Head height adjustment

1. Playback the alignment tape (SR2-2).
2. Adjust the A/C head height adjusting nut for maximum audio output.

d. A/C Head Position Adjustment

1. Playback the mode, white video envelope signal on the alignment tape (SR1-2).
2. Trigger the oscilloscope with the video switching pulse and observe the video envelope waveform.
3. Turn the cam adjust slowly and fix the taper nut at the position where the video envelope reaches a peak level.

4. Review Arm Guide Lever Adjustment

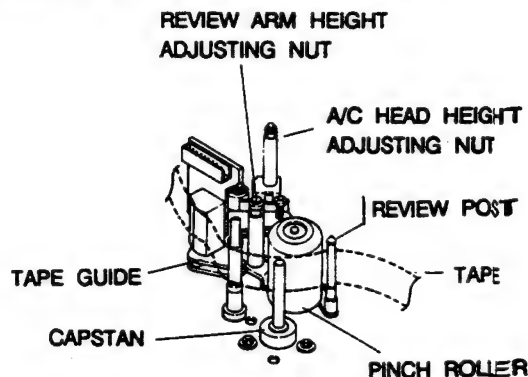


Fig. 9 Review Arm Guide Lever Adjustment

1. Set the VCP to FPS mode with E-180 tape (at beginning portion) loaded. Switch the FPS mode to review mode, after some tape has been wound into T-reel table.

2. Check tape wrinkle at the upper and lower flange of tape guide. Adjust the review arm so that the tape runs along the lower flange.
3. Set the VCP to the FPS mode again and make sure the tape is not twisted between the capstan and the review arm guide.
If it is twisted again, adjust the review arm guide height and the adjustment in step 1.

5. Check For Transitional Operation From Review to Play

Check transition from review mode to play mode, using a pre-recorded tape, make sure the entrance side of envelope comes to an appropriate steady state within 3 seconds, shown in Fig. 10.

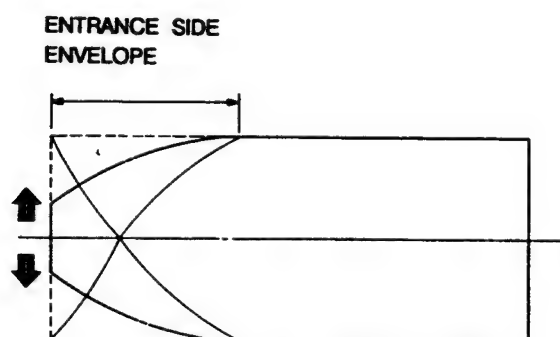


Fig. 10 Video envelope rising when operation mode is switch from review to play mode.

If it does not rise within 3 seconds, adjust as follows:

1. Make sure there is no gap between supply roller lower flange and tape. There is no adjustment for this.
2. Change operation mode from the review to the play mode again and make sure entrance side of envelope rises within 3 seconds.
3. If the envelope rises up then replace either the lower cylinder or base pole "L" then adjust again.

6. Envelope Check

1. Make recordings on E-120 and E-180 tapes, and make sure the playback output envelope meets the specification shown in Fig. 11.
2. In playback mode using the same video deck as used for the recording, (with an E-120) the video envelope should meet the specification shown in Fig. 11. In mode, (A) should be same as (B). If the difference is excessive then the upper cylinder should be replaced.

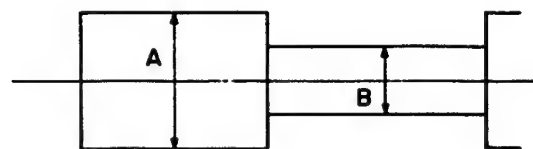


Fig. 11 Envelope output and output level difference

7. Tape Wrinkle Check

1. Run the E-180 tape in the playback, FPS, review and the pause mode and then observe tape wrinkle at each guide.
2. If excessive tape wrinkle is observed at the mode shown below, perform the associated adjustment also shown below.

a. Playback mode

Tape wrinkle at the S,T-guide roller section : Linearity adjustment. (S,T Guide Rollers Adjustment)
Tape wrinkle at tape guide flange : A/C head assembly adjustment.

b. Review mode

Tape wrinkle at tap guide : Review arm guide lever adjustment.

3-4. REEL TORQUE

3-4-1. General Features.

1. The rotation of the capstan motor operates the ass'y clutch through the capstan motor which is directly connected to the assembly clutch.
2. Brake operation and shift operation in FF/REW by one slide way.
3. Transportation of accurate driving force by gear tape (clutch ass'y).
4. Auto torque is converted by CAM system automatically.

MODE	TORQUE g/cm	GAUGE
PB/REC	60 - 110	Cassette Torque ment
RPS	120 - 180	Cassette Torque ment
FF/REW	Above 1000g/cm	Torque Gauge

Note :
If the Spec is out of above, replace the clutch ass'y and check it.

3-4-2. Location of Tension Pole and Back Tension Adjustment

1. Remove the housing ass'y and set the deck to play mode.
2. Adjust the cam tension to set at 0.5 ± 0.2 from the center of supply roller.
3. The back tension meter should be used for adjustment of back tension.

Check back tension, should be 42 ± 10 g.cm.
If not, check while adjusting cam tension.

Counter-Clock wise : Torque UP
Clock wise : Torque DOWN

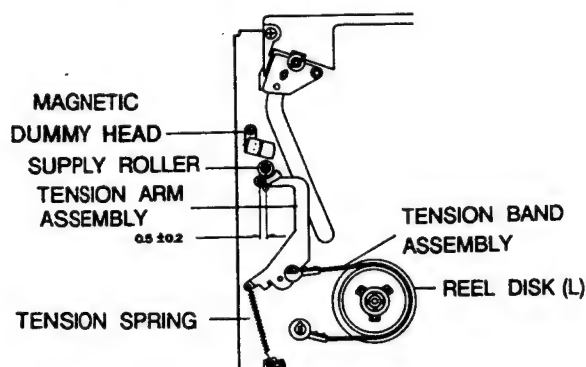


Fig. 12 Tension Pole and Back Tension Adjustment

3-4-3. Reel Torque Adjustment

1. Reel Torque Adjustment

a. Review mode

Excessive torque may damage the tape, however poor torque not wind the tape.

b. REC/PLAY BACK (Take-Up) mode

Weak torque can not wind the tape to the end, however excessive torque may make the tape expand.

BACK TENSION METER

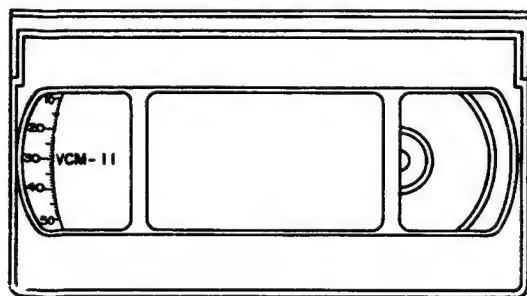


Fig. 13 Back Tension Tape Torque Cassette

c. Inspection

Rewind the torque cassette which is recorded in SP mode to the end and measure the torque shown below.

Rewind Torque : $120 - 180$ g.cm.

Record/Playback Torque : $60 - 110$ g.cm

2. Reel Torque Check

- a. Load the torque cassette in the VCP and fast forward the tape before proceeding with measurement.
- b. Set the VCP to the REVIEW mode and feed the tape for about 15 sec., and then make sure the take-up torque of $120-180$ g.cm is obtained while observing the left torque meter.
- c. After completion of step 3, set the VCP to the PLAY mode and feed the tape for about 30sec. Read the right torque meter and check whether the torque of $60-110$ g.cm is obtained.
- d. When the review torque and playback torque are out of limit, replace the clutch assembly.
- e. When the clutch assembly is replaced, perform the reel torque check.

3. Precautions for Usage of Torque Cassette (KT-300NR)

- a. Before loading a torque cassette in a VCP, always remove tape slack.
The tape slack can be removed by rotating the reel to its take-up direction. (The tape tends to slack when there is no reel brake actions).
- b. When the torque cassette is loaded, confirm the following.
 - b-1. Make sure the tape does not ride up or over the tape guide cap. If it does, do not eject the tape but bring the tape to its correct position, taking care not to damage the tape.
 - b-2. Make sure the tape has no slack, if it has slack, operate the VCP in FF or REW mode and then stop the tape. Then make sure the tape has no slack.
 - b-3. After above confirmation, proceed to the reel torque adjustments and confirmation.
- c. Cautions for removal of torque cassette.
 - c-1. When removing the torque cassette from the VCP, set the VCP to the STOP mode and wait for several seconds. Then, make sure the tape has no slack. Push the EJECT button to remove the cassette.
 - c-2. When removing the torque cassette from the VCP, also make sure the tape has no slack inside the cassette lid before pulling the cassette from the VCP.
If the tape has no place and then pull the cassette.
If the tape has no slack inside the lid, carefully bring the tape in place and then pull the cassette.

- d. If the previous precautions 1,2 and 3 are not performed properly, the tape may be damaged and correct measurements can not be performed.
- e. Do not use worn out or damaged tape, if they are used they may damage video heads on the cylinder. In such a case, always replace the tape with a new one.

4. Reel Disk Height Adjustment

- 1. Set the jig for reel disk height to the reel disk L,R as shown in Fig. 14.
- 2. The needles of L,R should be located within ± 0.05 limits.

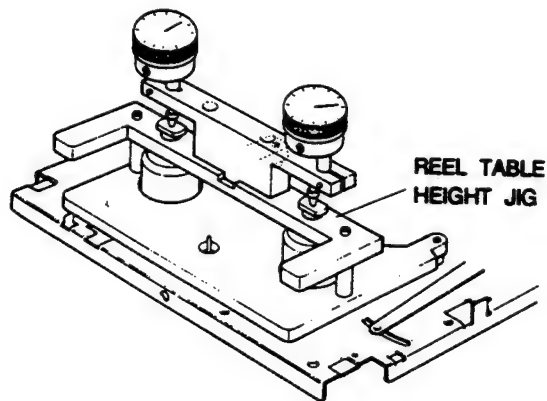


Fig. 14 Reel Disk Height

4. ELECTRICAL ADJUSTMENT

4-1. SERVO SECTION in Main A PCB

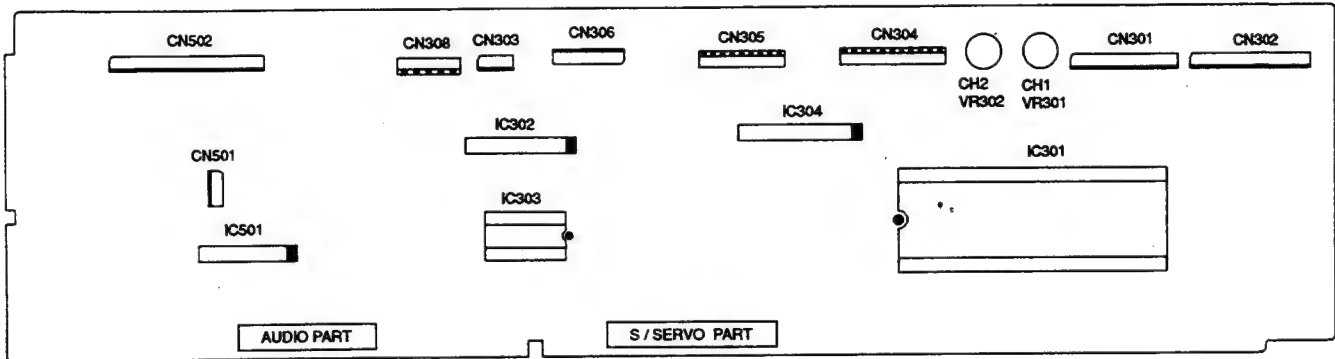


Fig. 1 Location of Main A PCB Component side

4-1-1. PG (Pulse Generator) Shifter Adjustment

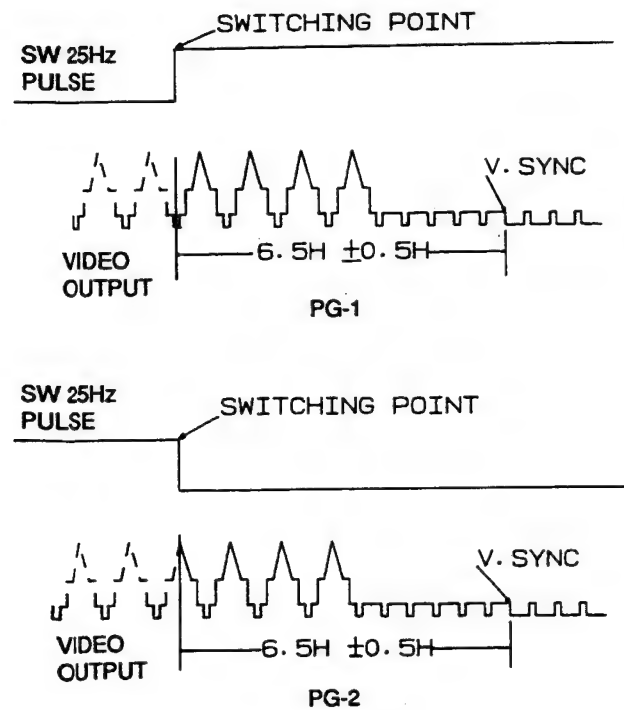


Fig. 2 PG Shifter Adjustment

Mode	Playback
Signal	Color bar or Monochrome
Test Point	TP402 ; H'd SW 25Hz Video out Jack ; Video out Signal
Equipment	Oscilloscope, SR 2-2Tape
Adjustment	VR301 (PG-1), VR302 (PG-2)
Specified Value	6.5 +/- 0.5H
<p>Adjustment Method</p> <p>The pulse Generator (PG) Shifter determines the video head switching point during playback. Misadjustment of the PG Shifter may cause head switching noise in the picture and/or vertical jitter.</p> <ol style="list-style-type: none"> 1) Load an alignment tape and playback the color bar signal or monochrome signal. 2) Connect channel-1 scope probe (1V/div.;50u/div.) to TP402. Trigger the scope on channel-1. 3) Connect channel-2 scope probe (1V/div.) to video out jack. 4) Set the scope to (-) slope and adjust the PG-1 shifter control (VR301) as in the PG-1. 5) Set the scope to (+) slope and adjust the PG-2 shifter control (VR302) so that the trailing edge of the SW25Hz pulse is 6.5+/-0.5H (Horizontal) lines before the start of vertical sync pulse. 	

4-2. VIDEO SECTION in Main B PCB

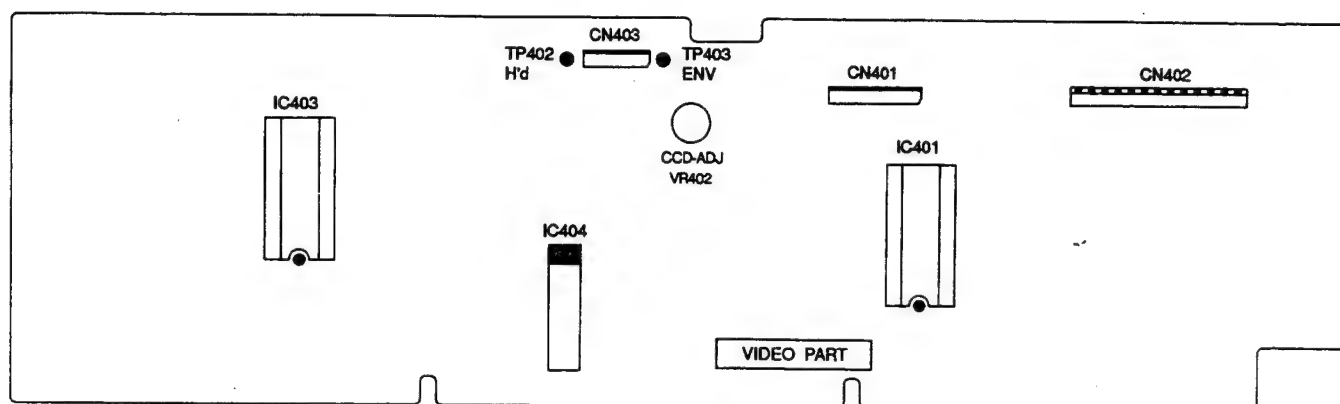


Fig. 3 Location of Main B PCB Component side

4-2-1. CCD IN (CLAMP) Adjustment

Mode	Playback
Signal	Color bar
Test Point	Pin 10 of IC401
Equipment	Oscilloscope, SR 2-2 Tape
Adjustment	VR402
Specified Value	0.55Vp-p
<p>Adjustment Method</p> <p>This adjustment is for the drop out compensation. When there is the drop out, if the CCD output level is very low, the black trigger occurs. If the level is very high, the white trigger occurs.</p> <ol style="list-style-type: none"> 1) Connect channel-1 scope probe (0.1V/div.) to pin 10 of IC401. 2) Load an alignment tape and playback the color bar signal. (Alignment tape SR 2-2) 3) Adjust the CCD IN Control (VR402) for 0.55Vp-p 	

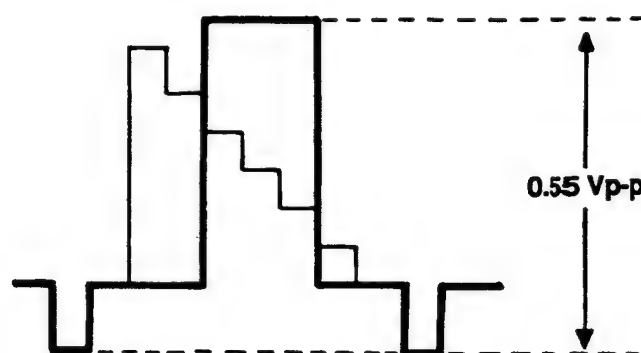


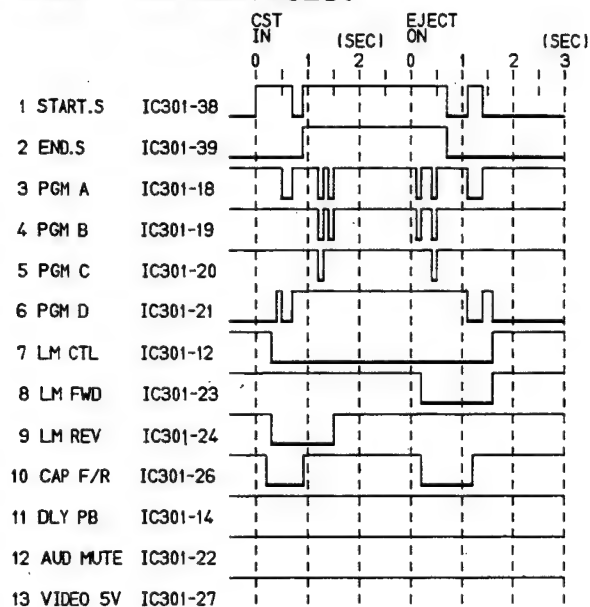
Fig. 4 CCD IN (CLAMP) Adjustment

5. TIMING CHART/TROUBLESHOOTING GUIDE

5-1. TIMING CHART

5-1-1.

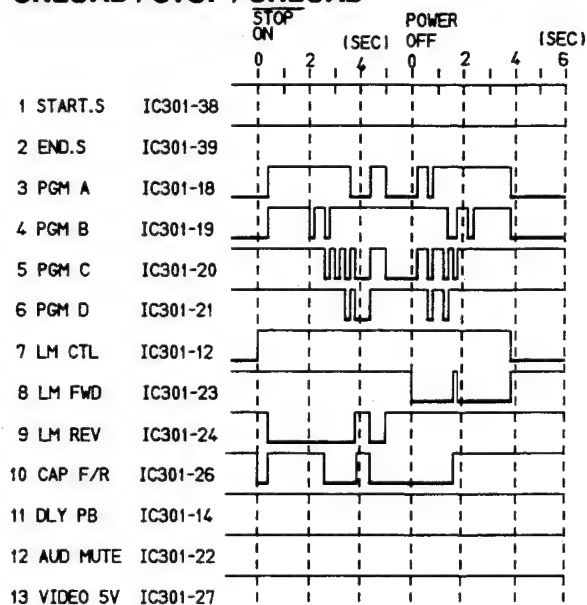
EJECT / UNLOAD / EJECT



HIGH —
LOW —

5-1-2.

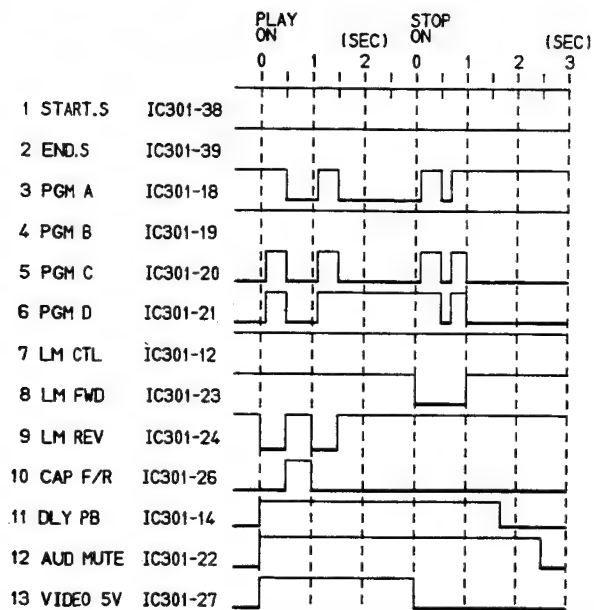
UNLOAD / STOP / UNLOAD



HIGH —
LOW —

5-1-3.

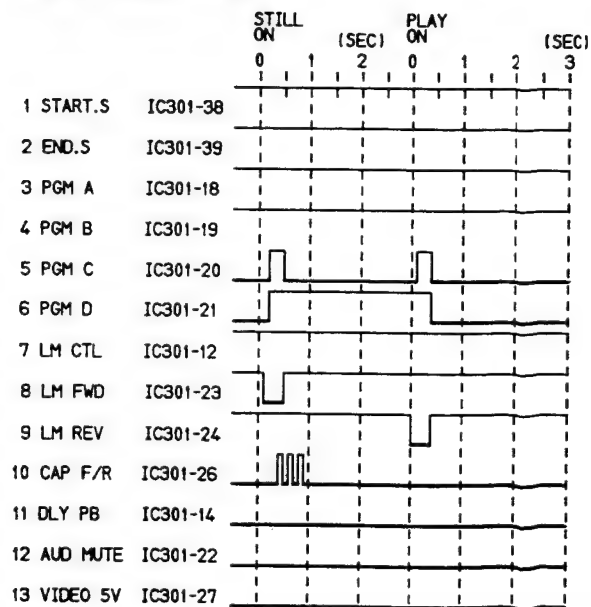
PLAY / STOP / PLAY



HIGH —
LOW —

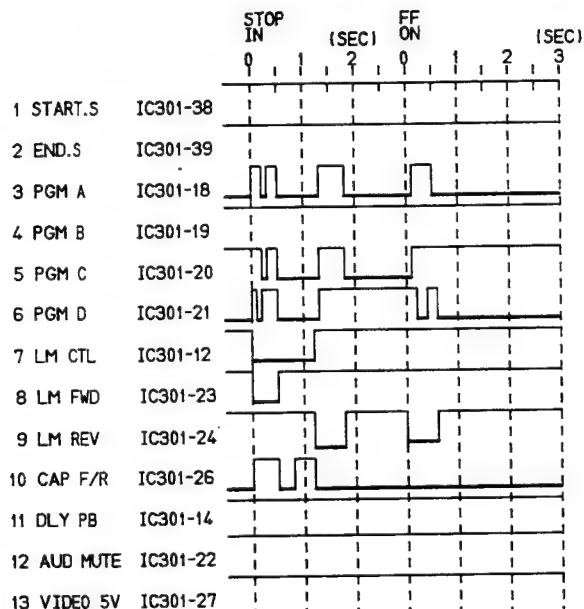
5-1-4.

PLAY / STILL / PLAY



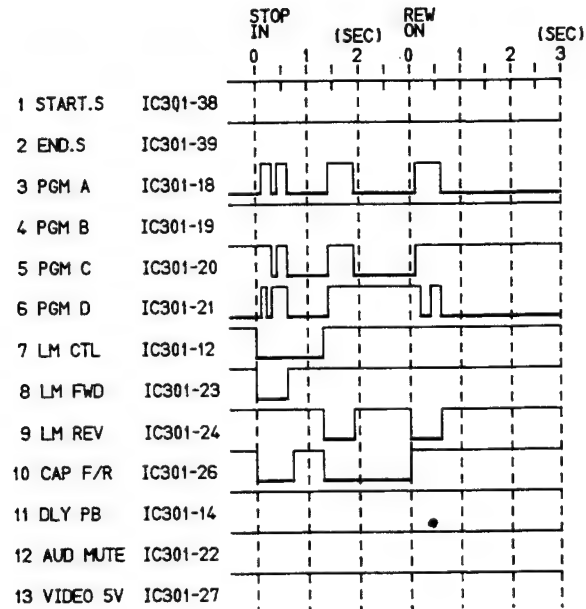
HIGH —
LOW —

5-1-5. FF / STOP / FF



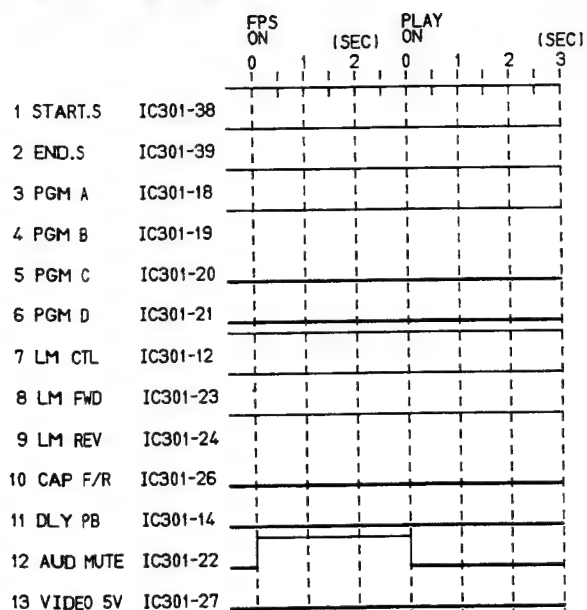
HIGH —
LOW —

5-1-6. REW / STOP / REW



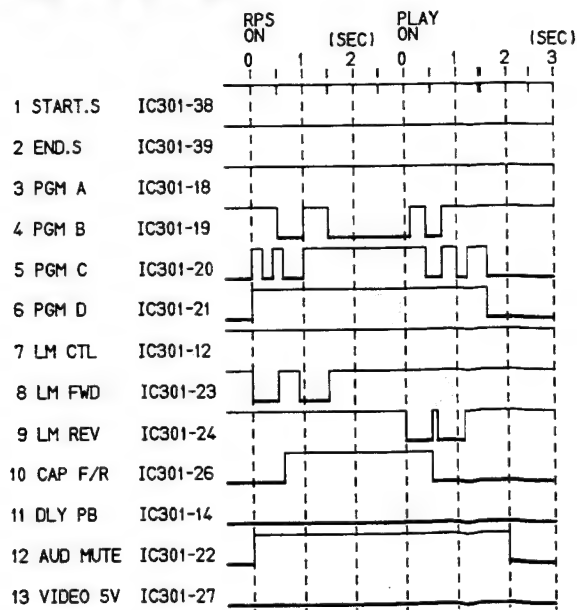
HIGH —
LOW —

5-1-7. PLAY / FPS / PLAY



HIGH —
LOW —

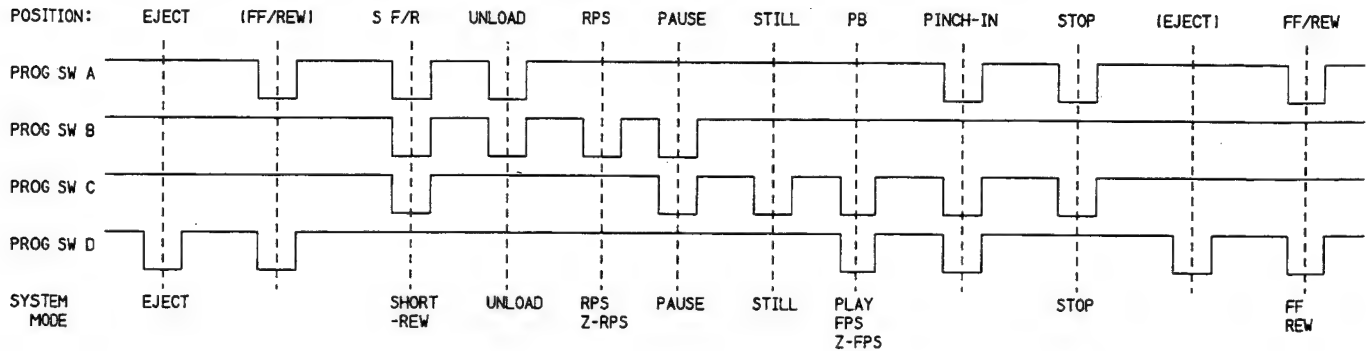
5-1-8. PLAY / RPS / PLAY



HIGH —
LOW —

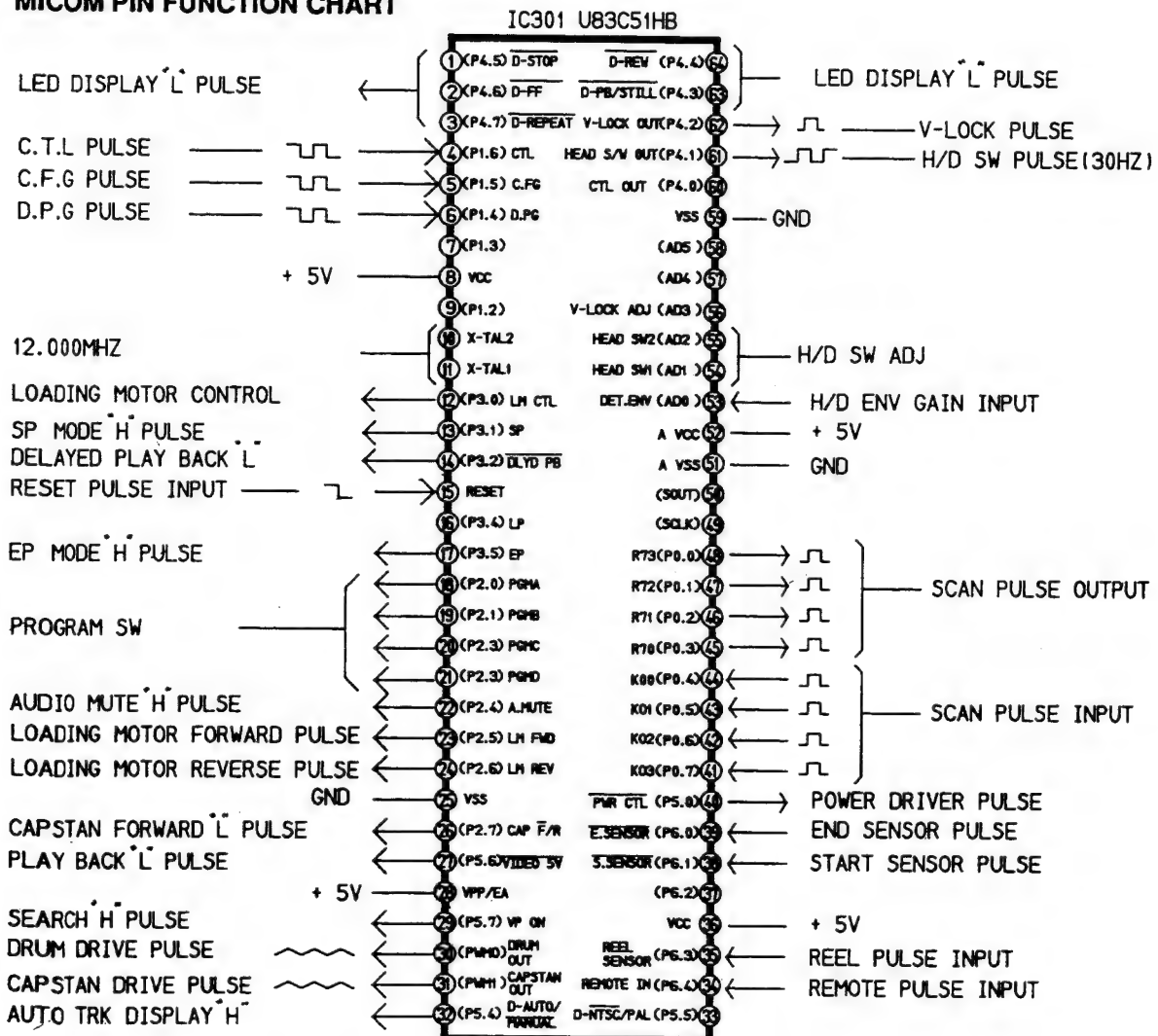
5-1-9.

PROGRAM SWITCH TIMING CHART



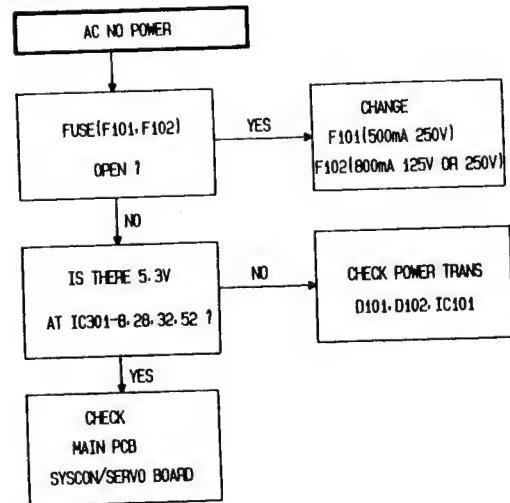
5-1-10.

MICOM PIN FUNCTION CHART

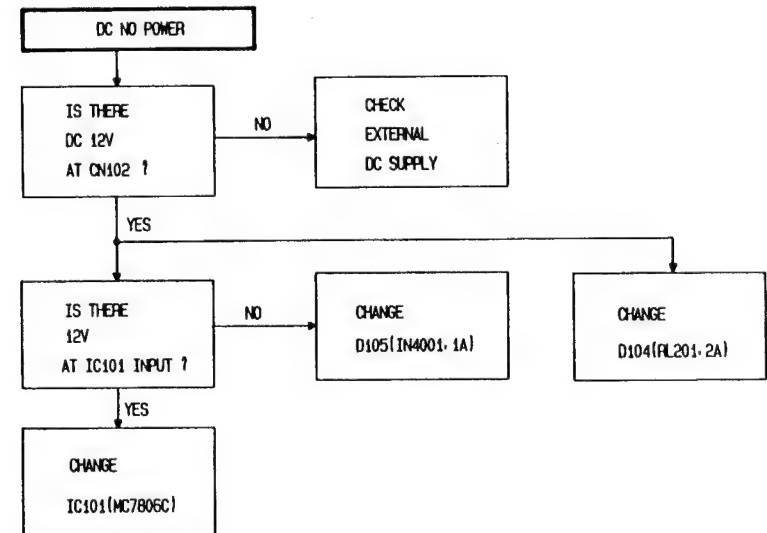


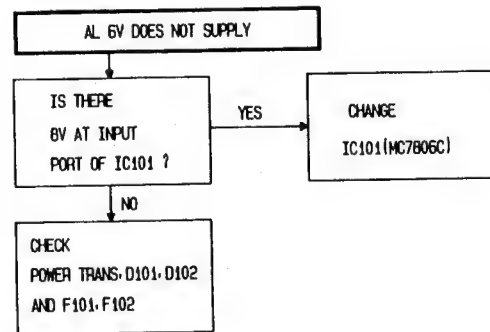
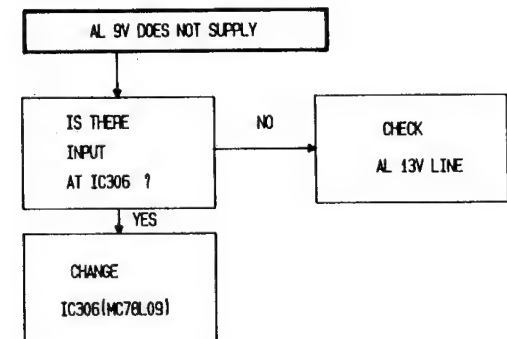
5-2. TROUBLESHOOTING GUIDE

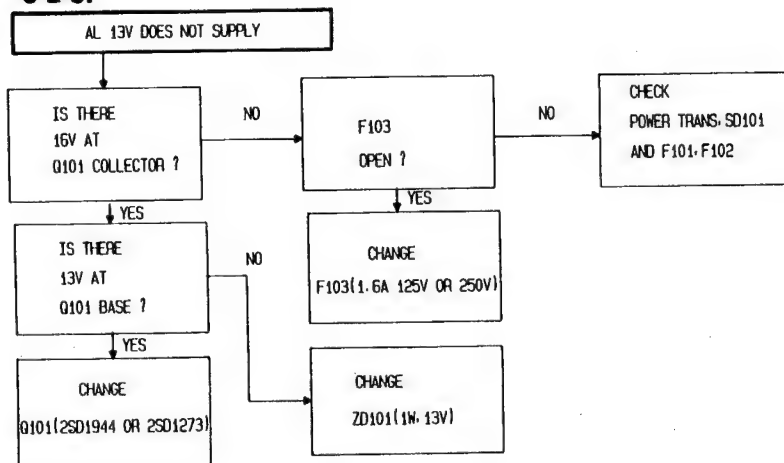
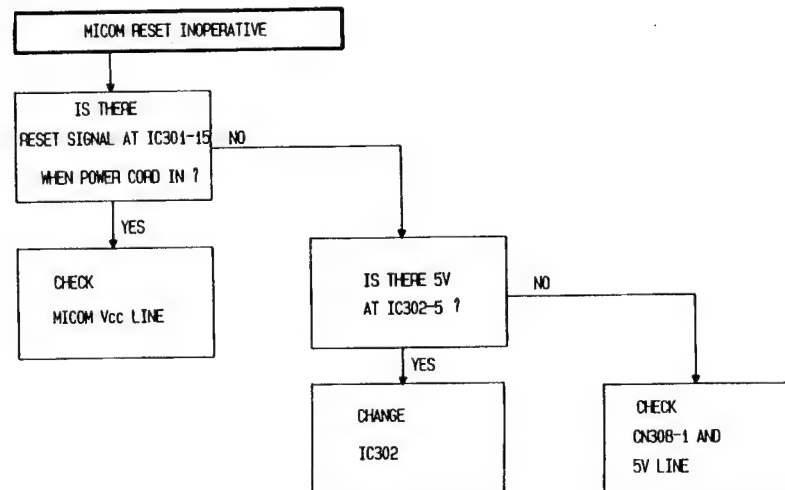
5-2-1.



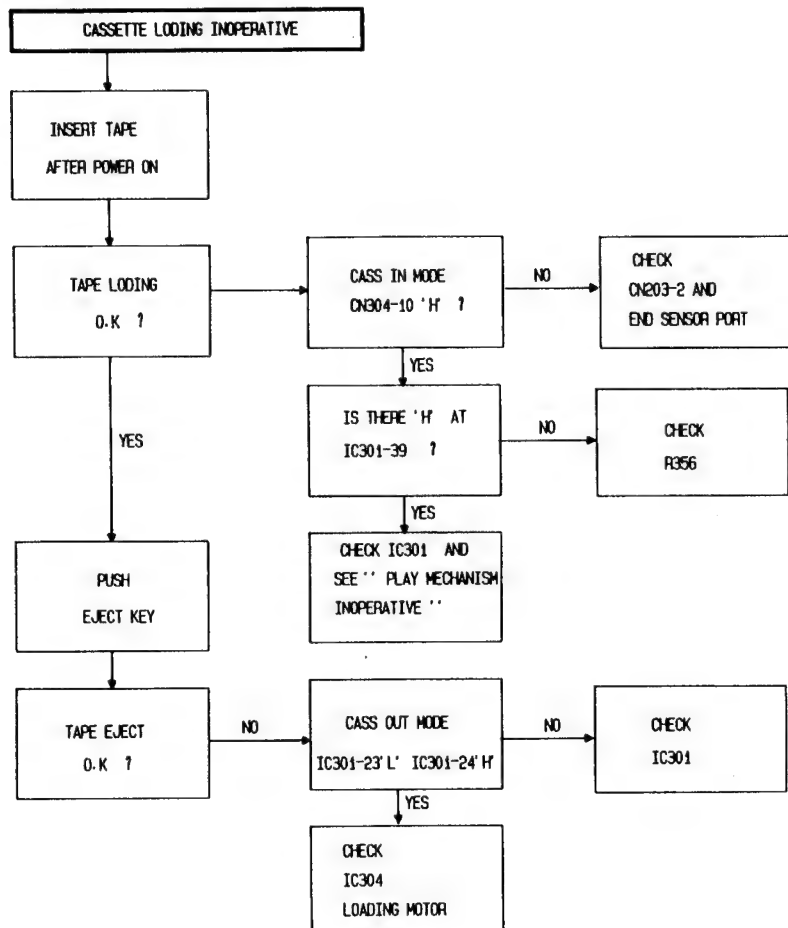
5-2-2.



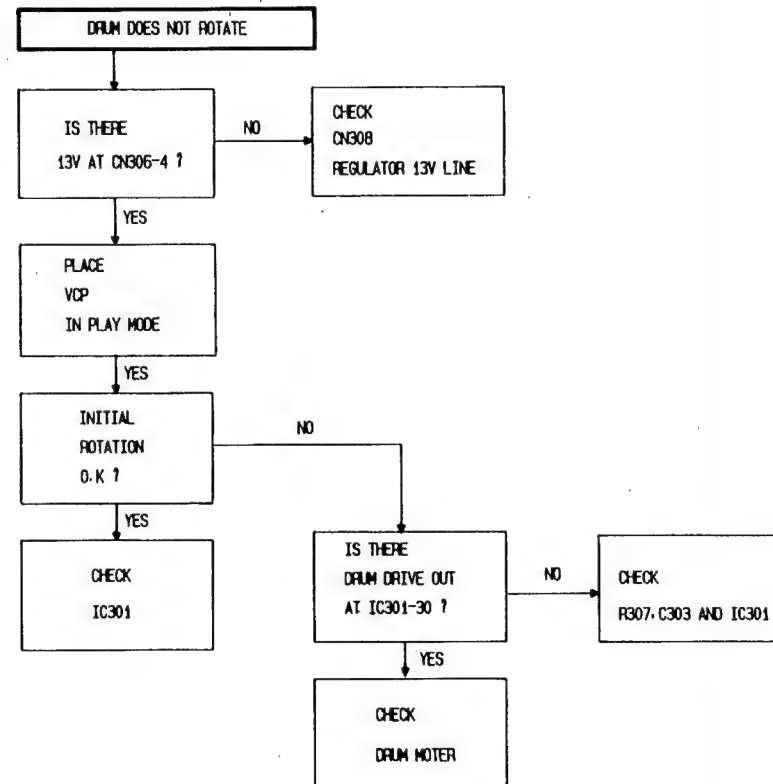
5-2-3.**5-2-4.**

5-2-5.**5-2-6.**

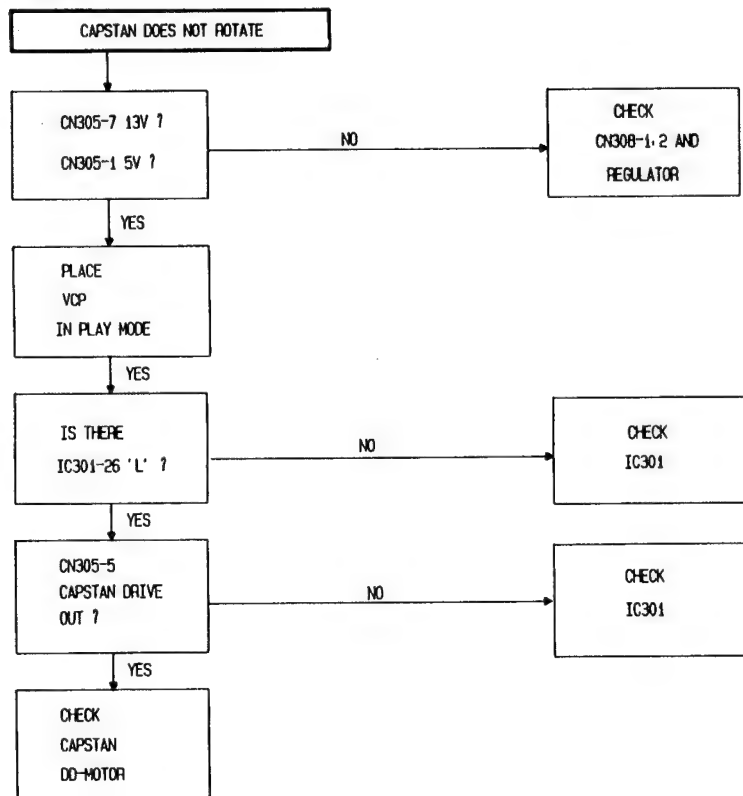
5-2-7.



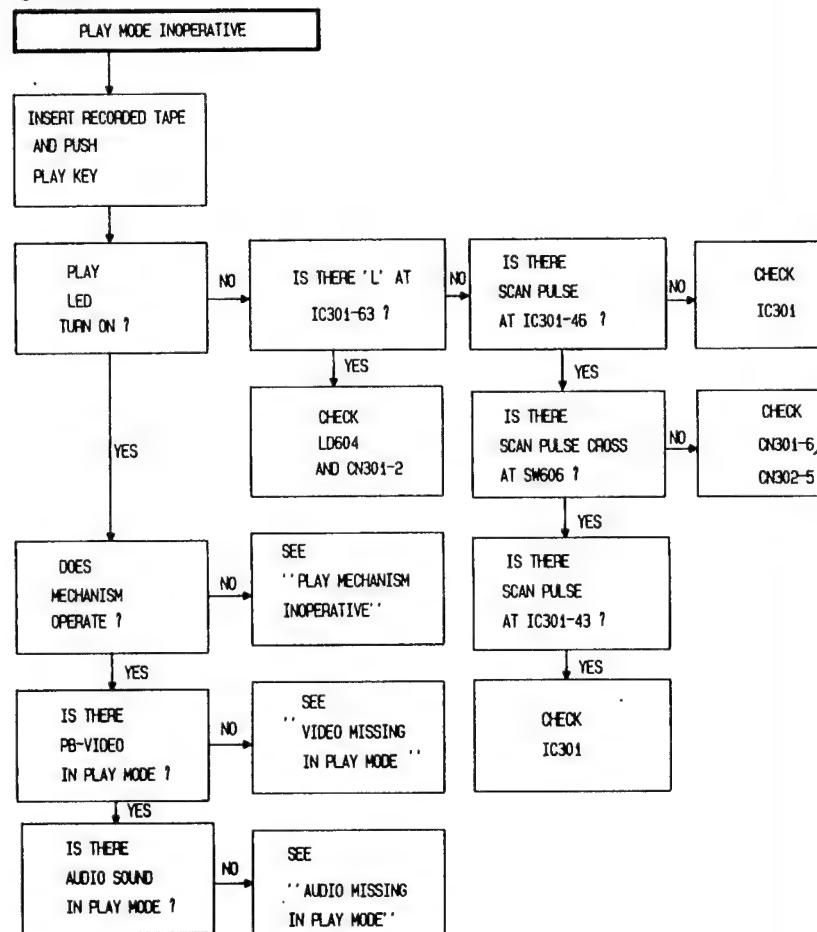
5-2-8.



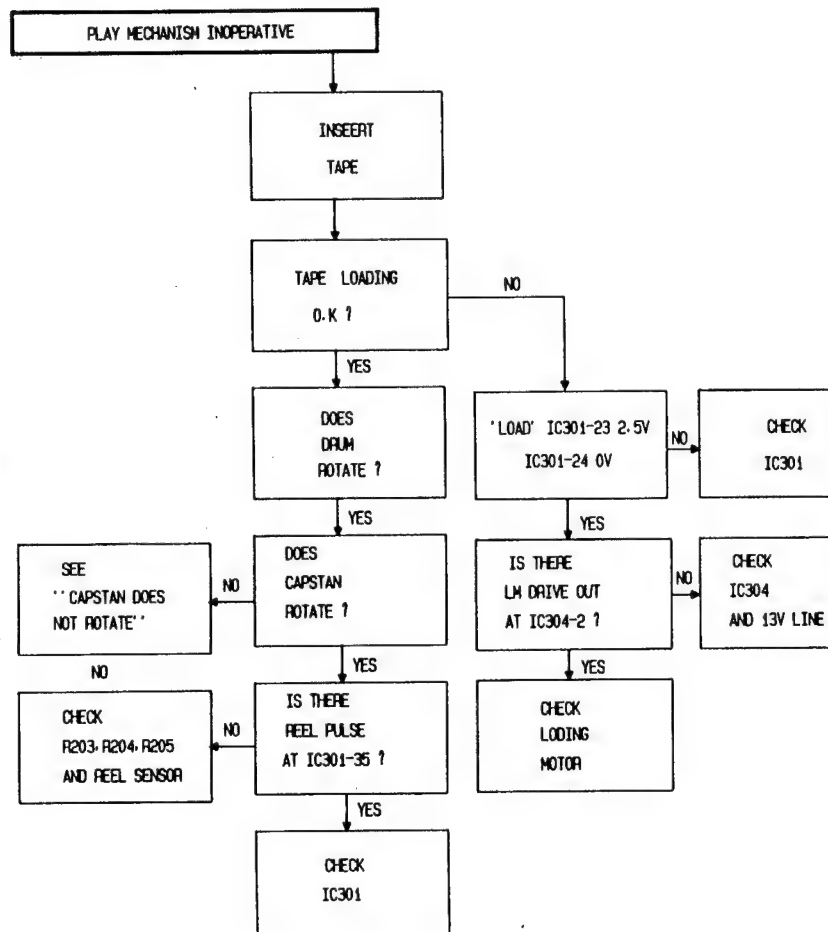
5-2-9.



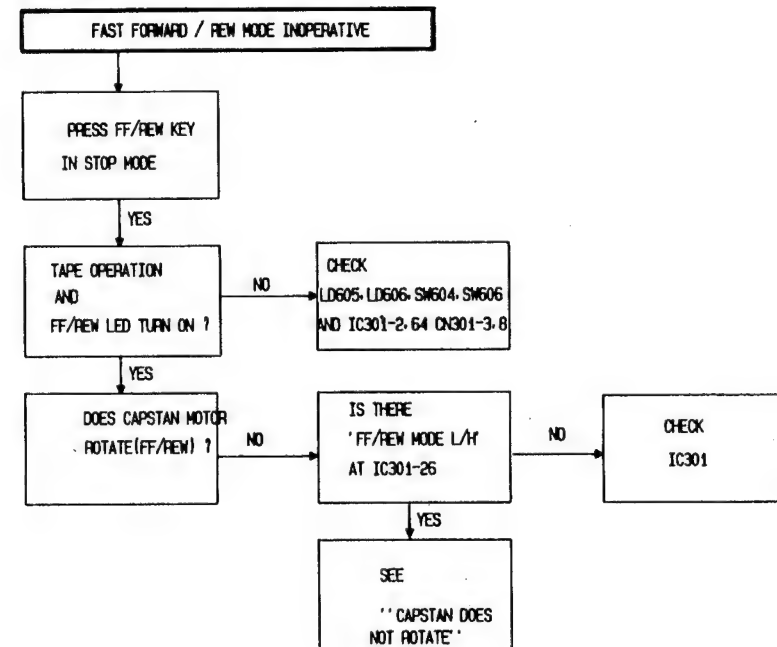
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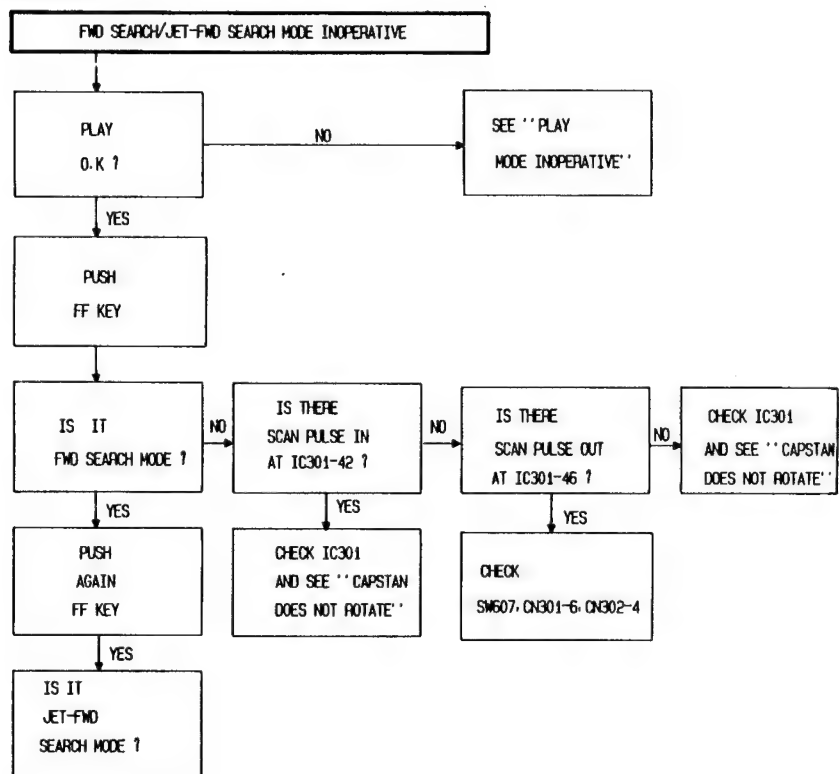
5-2-11.



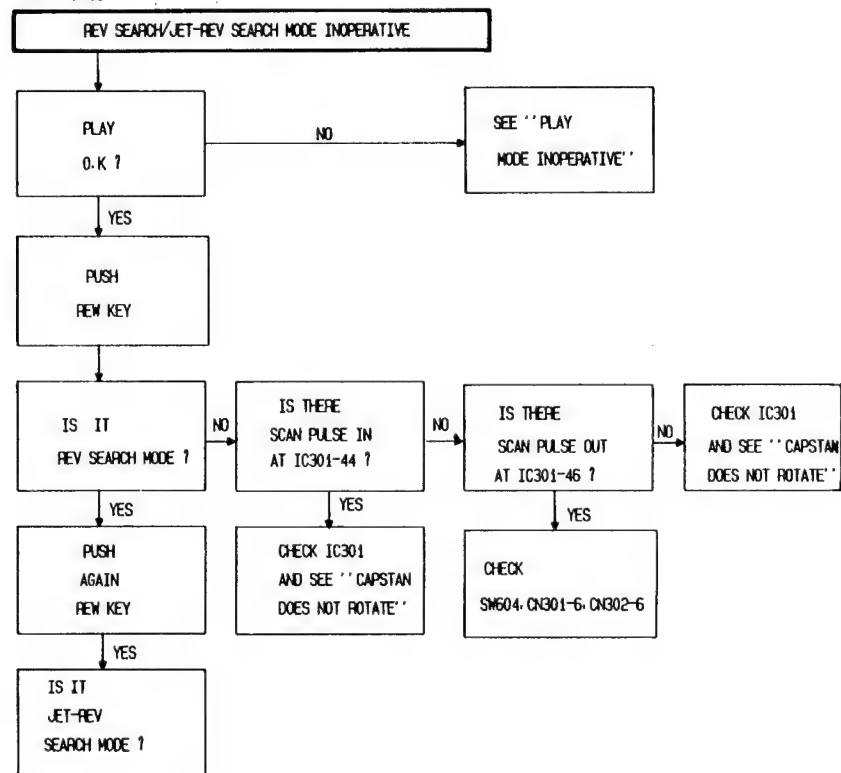
5-2-12.



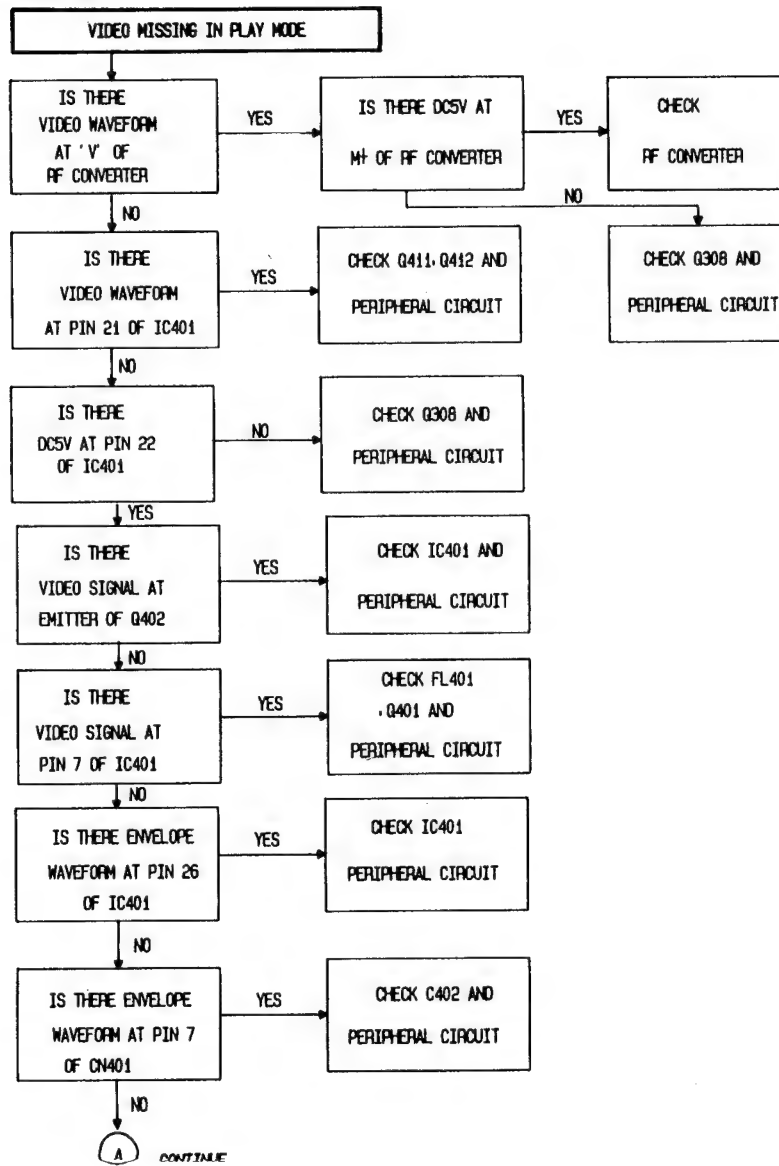
5-2-13.



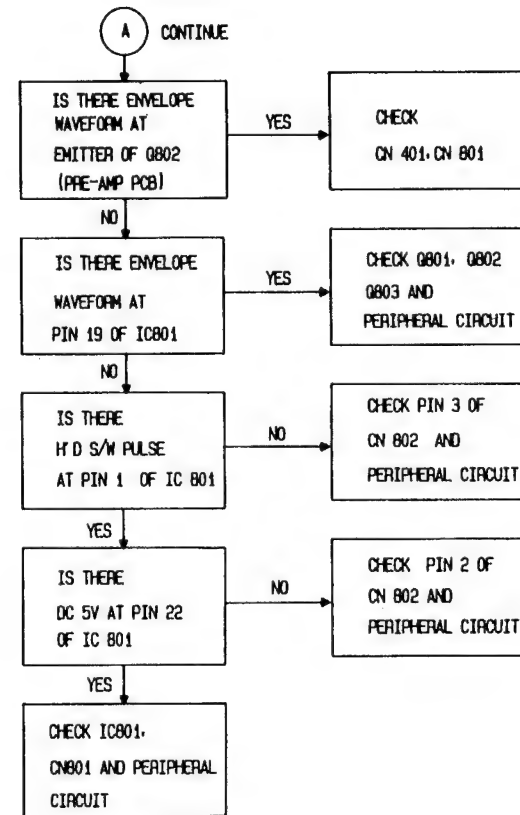
5-2-14.



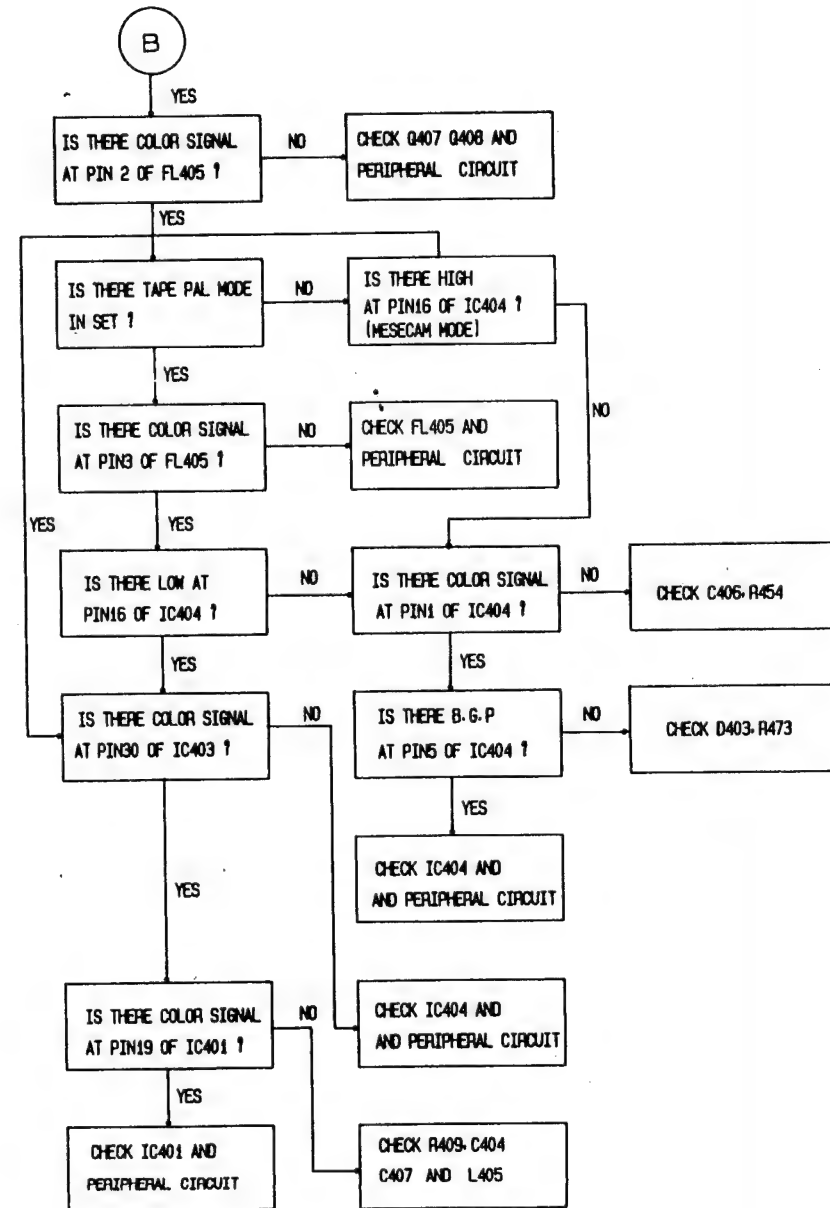
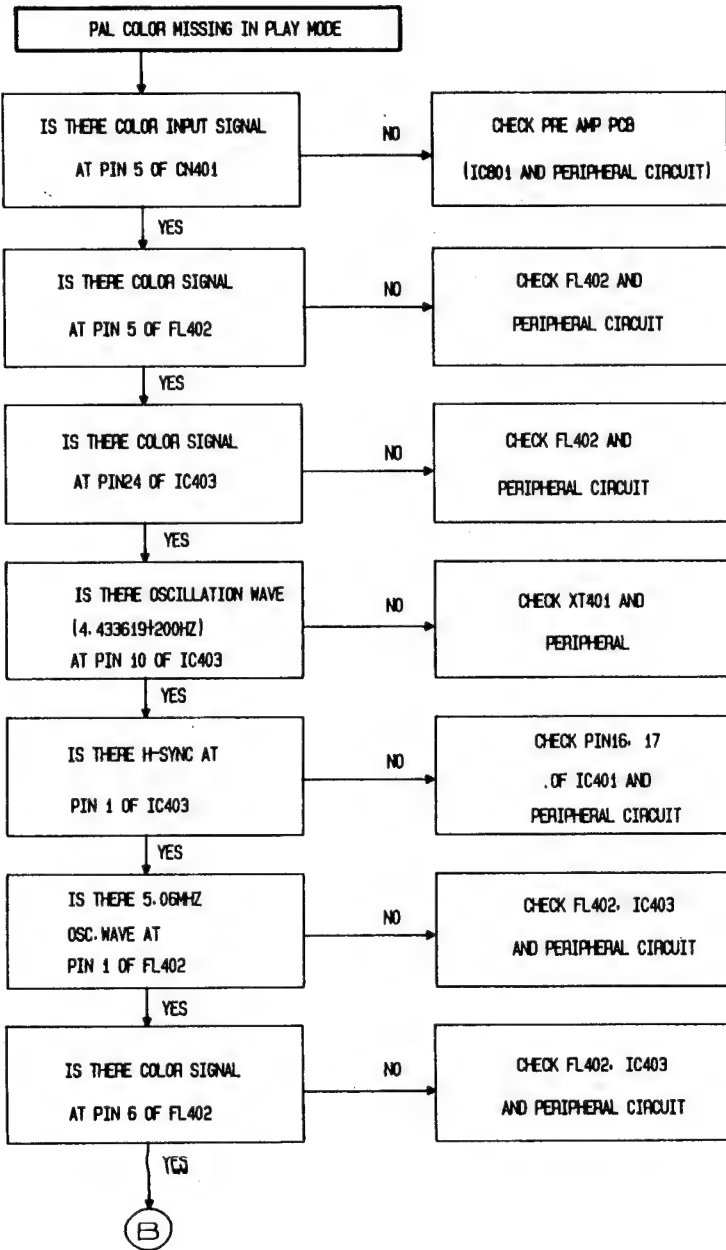
5-2-15.



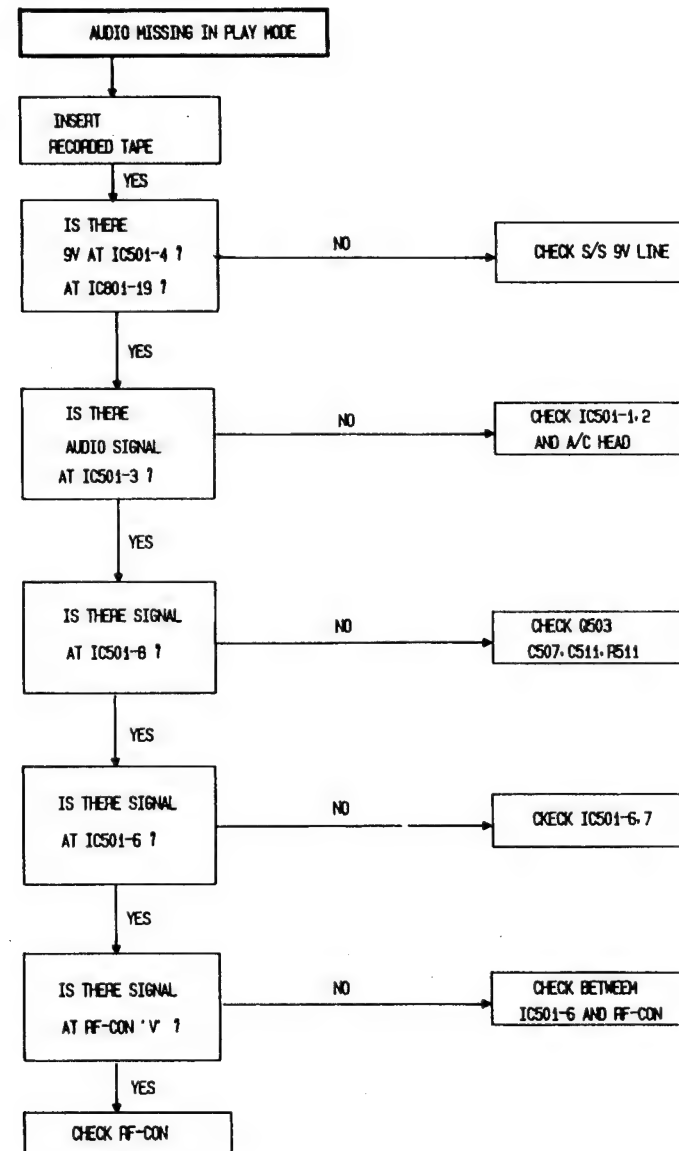
5-11



5-2-16.




5-2-17.



6. REPLACEMENT PARTS LIST

1. Parts Replacement

Many electrical and mechanical parts in video cassette recorder(player) have special safety-related characteristics. These are after not evident from visual inspection nor the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by  in the replacement parts lists and schematic diagrams.

The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazard.

2. Unless otherwise specified :

1) All resistors are in ohms (Ω)

- K = 1,000

- M = 1,000K

* RD : 1/8W, +/- 5% Carbon

* RM : 1/4W, +/- 5% Metal-film

2) All capacitors are in +/- 10%, MF = μ F.

* CC : PF = μ F, Ceramic, Temp

* CK : PK = μ F, Ceramic, MK

* CS : Tantalum

* CQ : Polyester

* CE : Electrolytic

3) All coils are in microhenries (μ H), M = 1,000 μ H.

3. ASS'Y = Assembly.

4. P . W . B = Printed Wiring Board.

5.  Mark : Safety related parts.

6. How to order replacement parts

To have your order filed promptly and correctly, please furnish the following informations.

1) Model Number

2) Location Number

3) Part Number

4) Description & Specification

7. P . W . B Assembly is not Replacement Item.

6-1. MECHANICAL REPLACEMENT PARTS LIST

LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK	LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK
INSTRUMENT ASSEMBLY							
1	69000-212-005	ASS'Y-PANEL FRONT ; PX-990R/SEG		8226	66674-640-810	S/P SUB "L" ; SUS 304 WPB	
	69000-213-050	ASS'Y-PANEL FRONT ; PX-991R/SEG		8227	66674-642-710	S/P MAIN SLIDE;SWPB(YEL)	
	69000-214-051	ASS'Y-PANEL FRONT ; PX-992R/SEG		8230	65252-600-910	MAIN BRAKE SLIDE ASS'Y;PBT+SUS	
122	69097-415-501	REGULATOR ASS'Y ; P-5 230V(DC12V) CP2		8231	65253-609-210	LEVER SHIFT;POM	
125	63334-010-036	DC JACK ASS'Y ; P-5 DIN TYPE		8232	65294-602-310	TENSION CONTROL LEVER;POM	
130	66020-602-710	FRAME ; HIPS 94HB (P-5)		8234	66053-604-410	CLUTCH ASS'Y;(X-1)	
132	66612-607-110	BOTTOM COVER ; SPG TO.5 720 COIL		8241	66614-625-010	HEAD BRUSH ASSY;SECC T1.0+CARBON TIP	
135	62569-002-266	RF-CONVERTER ; RMUP 23655FA		8243	63054-309-110	SUMI-CARD;P1.25 9P 180m/m	
137	69557-603-202	ASS'Y MAIN A ; P-5 PAL MESECAM		8246	69000-290-240	ASSY-REEL PCB(R);DX1-NR2	
139	69552-601-201	ASS'Y MAIN B ; P-5 PAL MESECAM		8247	64769-052-236	MOTOR D.D CAPSTAN;F20K889(X-1)	
143	66634-602-610	CLAMPER WIRE ; PE BLK		8248	65254-626-020	D.D BRAKE ASS'Y;PBT+FELT	
151	69370-601-202	ASS'Y FUNCTION ; PX-990R		8249	65274-603-210	CAPSTAN BELT;CY65(X-1)	
	69570-603-202	ASS'Y FUNCTION ; PX-991R		8250	66674-638-820	D.D CAPSTAN S/P;SUS 304(X-1)	
	69570-603-203	ASS'Y FUNCTION ; PX-992R		8257	66674-646-910	GROUND PLATE BOTTOM;SUS 430 TO.3	
163	66002-604-710	TOP CABINET ; PVC STEEL TO.75 DARK GRAY		8258	63579-101-027	SW-RECORD;SPPB-S-061	
167	66463-605-210	CONNECTOR-BOARD ; HIPS 94HB (PAL UHF)		8259	66604-633-710	STOPPER P/I;POM	
183	67108-330-061	SCREW-TAP.PWH ; M3X6 TAP TITE		907	67004-100-710	SCREW-PH;+M3X4 FE FZY	
190	67158-240-121	SCREW BH ; 2-4X12 FE FZY		920	67128-520-203	SCREW-TAPTITE PWH;M2.6X6 FE FZY	
193	67158-240-103	SCREW-TAP BH ; 2S-4X10FE FZB		922	67108-526-243	SCREW-TAP.PH;2S-3X8 FE FZY	
200	DX1-NB2	FULL DECK ASS'Y ; P-5		956	67304-103-410	WASHER-PLAIN;3.2X6X0.5 POLYSLIDER	
454	69512-603-202	ASS'Y PRE-AMP ; P-5 PAL MESECAM		957	67334-600-310	WASHER SLIT;PI2.5XPI5XT0.5	
533	67642-603-825	DOOR HOUSING ; ACRYL		961	67304-602-610	WASHER SLIT;PI3.6XPI12XT0.5 LUMIRROR(RED)	
TRANSPORT MECHANISM ASSEMBLY				CN6204	63053-804-128	LEAD CONNECTOR ASSY#26 51004-51004 4P	
				Q6202	62309-110-244	PHOTO INTERRUPTER;NJL5165K	
				H500 66122-700-630 F/L HOUSING ASS'Y ; HF-X			
T202	65224-606-220	CAP(NO.8 GUIDE);DURACON M90-44		H501	66151-602-210	UPPER CHASSIS;SECC 20/20 T=1.0**	
T203	69000-290-220	ASSY LED(R);DX1-NR2		H502	66461-600-120	GUIDE CASSETTE;ABS(GP-2200)BLK	
T206	69000-280-244	G/R & P/B ASSY "R" ; X-1		H503	69000-470-610	SIDE CHASSIS(L)ASS'Y;ABS+POM	
T207	69000-280-242	G/R & P/B ASSY "L" ; X-1		H504	69000-470-690	SIDE CHASSIS "R" ASS'Y;ABS+POM+SECC	
T209	65292-600-620	LOADING UNIT ASSY;POM+SUS+SECC		H552	69000-470-620	ASS'Y CASS HOLDER;SECC+POM+SUS	
T209-1	64769-052-140	MOTOR-LOADING;RF-370C-15370		H553	69000-470-660	PWB SENSOR ASSY;PWB+TR+WIRE	
T209-2	63579-101-026	SW-PROGRAM;SRZ2-S-092(X-1)		H556	69000-470-650	ASSY-SIDE ARM;SUM+POM+DURCON	
T209-3	65204-613-310	GEAR WORK;PBT(DURANEX #2002)		H561	65253-608-510	MASK CAM LEVER;POM(M90-44)	
T213	65203-604-910	WORM GEAR WHEEL;POM(X-1)		H562	65204-613-510	LIGHT SHUTTER;POM(M90-44)	
T214	65203-605-010	E/T DRIVE GEAR;PBT(X-1)		H563	66674-639-820	S/P LIGHT SHUTTER;SUS 304 WPB	
T215	65241-600-010	MASTER CAM GEAR;POM(X-1)		H564	66133-600-410	EARTH PLATE ; SUS304 T=0.25	
T216	66613-610-710	E/J DRIVE BRKT;SECC T1.2		H565	66674-639-310	S/P ARM TORSION	
T217	66674-639-210	S/P EJECT DRIVE;SWPB		H573	65203-605-310	JOINT GEAR;POM(WHT)	
T219	65253-611-610	PINCH ROLLER LEVER ASS'Y		H574	65253-605-310	EJECT SLIDE;SECC 20/20 T=1.6	
T220	65263-601-030	BRAKE LEVER CAM ASS'Y;SECC 20/20+SUM		924	67154-101-420	SCREW-TAP PWH ; 2S-3X8 FE FZY	
T221	65234-602-610	REEL DISK "L" ASS'Y;POM+SUS		C6202	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-W	
T222	65234-602-620	REEL DISK "R" ASS'Y;POM+PD CYSETER		C6203	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-W	
T228	65254-626-510	BRAKE SUB "R" ASS'Y;X-1		Q6203	62309-110-510	PHOTO TR;RPM-20D8	
T229	66603-612-810	BRAKE SUB "L" ;POM		Q6204	62309-110-510	PHOTO TR;RPM-20D8	
T233	66054-609-410	IDLER SUB ASSY;(X-1)		T242 69000-290-231 ASSY P.C.8 JOINT(R);DX1-NB2			
T235	65253-609-010	TENSION ARM ASS'Y;SECC+POM+SUS		CN201	63349-062-400	CONNECTOR-WAFER;5267-11A	
T236	65274-603-110	TENSION BAND ASS'Y;POM+FELT+LUMIRROR		CN202	63349-604-140	CONNECTOR WAFER;53014-0410	
T237	66674-640-510	TENSION SPRING;SUS304-WPB		CN203	63349-604-130	CONNECTOR WAFER;53014-0310	
T238	65263-600-810	REVIEW ARM ASS'Y;SECC 20/20+SUS		CN204	63053-208-106	LEAD CONNECTOR ASSY;1429 #26 51004-5255	
T239	66674-639-020	S/P REVIEW ARM;SUS304-WPB P10.55		Q201	62137-302-740	TRANSISTOR;KSC 945-Y TAP6	
T240	67224-602-011	NYLON NUT;M3 X 4.5 NYLON 66 + SWR		R201	61048-177-155	R-METAL FILM;RM 1/8TS 1.5H-J	
T242	69000-290-230	ASSY-PCB JOINT(R);DX1-NR2		R202	61048-177-155	R-METAL FILM;RM 1/8TS 1.5H-J	
T252	66674-640-920	SPRING TORSION A/C;SWPB (NI)		R203	61048-177-391	R-METAL FILM;RM 1/8TS 390-J	
T253	67224-602-011	NYLON NUT;M3 X 4.5 NYLON 66 + SWR		R204	61048-177-224	R-METAL FILM;RM 1/8TS 220K-J	
T254	67224-602-210	CAM ADJUST;ALLOY 5		R205	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J	
T255	69000-290-260	ASSY-A/C HEAD(R);DX1-NR2		R206	61048-177-124	R-METAL FILM;RM 1/8TS 120K-J	
T256	64079-700-595	HEAD MAGNETIC F/E;VTR-1X2ERS11-092		R207	61048-177-224	R-METAL FILM;RM 1/8TS 220K-J	
T300	69019-123-140	CYLINDER ASS'Y ; CX1-P2N					
T301	69000-390-271	ASSY-UPPER CYLINDER;CX1-P2N					
T302	63005-701-075	PWB-UPPER CYLINDER ; 94V0 47X47X1.0T					
T303	69000-390-022	ASSY-LOWER CYLINDER;CX1S2/AS					
T304	67223-600-110	HOLDER TR ASSY;ZDC+SUS301 CSP TO.2					
T305	69000-390-061	SEMI ASSY-MOTOR(U);CX1					
T306	66121-601-210	CYLINDER-BASE;ADC 12(X-1)					
906	67008-130-061	SCREW-PH;+M3X6 FE FZY					
907	67004-100-710	SCREW-PH;+M3X4 FE FZY					
909	67008-126-081	SCREW-PH;+M2.6X8 FE FZY					
910	67008-126-041	SCREW-BH;+M2.6X5 FE FZY					
912	67094-604-710	SCREW-DAMPER ; M2. 0X7.0 SWCM 10					
913	67008-123-101	SCREW-PH;+M2.3X10 FE FZY					
916	67004-126-086	SCREW-BH;+M2.6X8 WSZN/70391398					
917	67004-100-310	SCREW-PH;+M3X8 FE FZY WL					
922	67108-526-243	SCREW-TAP.PH;2S-3X8 FE FZY					
956	67304-103-410	WASHER-PLAIN;3.2X6X0.5 POLYSLIDER					
957	67334-600-310	WASHER SLIT;PI2.5XPI5XT0.5					
961	67304-602-610	WASHER SLIT;PI3.6XPI12XT0.5 LUMIRROR					
CN202	63053-916-297	LEAD CON ASSY;1429 #26 PHR-06 1L-M-6P-SA					
BOTTOM SIDE MECHANISM ASSEMBLY							
8204	65264-606-510	LOADING GEAR "L" ASS'Y ; X-1					
8205	65264-606-610	LOADING GEAR "R" ASS'Y ; X-1					
8208	65263-601-110	SECTOR GEAR ASS'Y;SECC+SUM					
8223	65254-626-210	MAIN BRAKE "L" ASS'Y ; X-1					
8224	65254-626-310	MAIN BRAKE "R" ASS'Y ; X-1					
8225	66674-640-710	S/P SUB "R" ; SWPB(BLK)					

6-2 ELECTRICAL REPLACEMENT PARTS LIST

LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK	LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK
122	69097-415-501	REGULATOR ASSY:P-5 230V(DC12V) CP2 EUROPE		137	ASSY MAIN A : P-5 PAL MESECAM		
					SYSTEM CONTROL/SERVO PARTS		
	62869-190-289	POWER TRANSFORMER;66X20 S 230V 50HZ		C302	61417-109-210	C-CERAMIC.HK;CK45F TAPG 50V 104-Z	
	63053-811-221	POWER CORD ASSY;KLCCE-2F CP-2		C303	61507-121-450	C-POLYESTER;CQ921M TAPG 50V 682-K	
C101	61407-117-228	C-CERAMIC.AXIAL;CAX SL TAPG 50V 223-Z		C304	61507-121-450	C-POLYESTER;CQ921M TAPG 50V 682-K	
C102	61407-117-228	C-CERAMIC.AXIAL;CAX SL TAPG 50V 223-Z		C305	61637-504-471	C-ELEC;CEAP 16V 470M SG(10X12.5)	
C103	61639-205-472	C-ELEC;CE 25V 4700M SA (18X40)		C306	61637-503-221	C-ELEC;CEAP 10V 220M SG(6.3X11)	
C104	61639-906-222	C-ELEC;LC-1631-2200-35-M		C307	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M	
C105	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG		C308	61607-421-160	C-ELECTROLYTIC;LC-0511-22-16-M TAPG	
C106	61637-506-470	C-ELEC;CEAP 35V 47M SG(6.3X11)		C309	61507-121-260	C-POLYESTER;CQ921M TAPG 50V 104-J	
CN101	63349-062-520	CONNECTOR-WAFER;5268-03A		C310	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG	
CN102	63349-062-540	CONNECTOR-WAFER;5268-05A		C311	61407-117-228	C-CERAMIC.AXIAL;CAX SL TAPG 50V 223-Z	
D101	62169-201-050	DIODE;1N4001 TAPG		C312	61637-504-101	C-ELEC;CEAP 16V 100M SG(6.3X11)	
D102	62169-201-050	DIODE;1N4001 TAPG		C313	61607-421-120	C-ELECTROLYTIC;LC-0511-4.7-50-M TAPG	
D103	62169-201-050	DIODE;1N4001 TAPG		C314	61407-101-360	C-CERAMIC.TEMP;CC45 SL TAPG 50V 100-J	
D104	62169-407-068	DIODE;RL201(2A)		C315	61607-421-120	C-ELECTROLYTIC;LC-0511-4.7-50-M TAPG	
D105	62169-407-068	DIODE;RL201(2A)		C316	61637-504-101	C-ELEC;CEAP 16V 100M SG(6.3X11)	
F101	64079-084-035	FUSE;5X20MM T200MA 250V		C317	61407-101-360	C-CERAMIC.TEMP;CC45 SL TAPG 50V 100-J	
F102	64709-084-810	FUSE;T1.6A 250V T19195 5X20mm WIC EUR		C318	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG	
IC101	62119-108-019	IC;MC 7806C		C319	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG	
LC101	61469-502-010	C-CERAMIC DISK;CS17-E2GA 472 MYAS		C320	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M	
LF101	62429-014-115	LINE-FILTER;HL38		C321	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG	
Q101	62139-301-308	TRANSISTOR;2SD 1944/2SD1273		C322	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M	
R102	61049-311-080	R-METAL OXIDE;RS 1/2P 330-J		C323	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG	
SD101	62169-403-562	DIODE-STACK;RBV402		C324	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAPG	
ZD101	62169-403-839	DIODE ZENER;UZP-138(1W 13V)		C326	61407-101-210	C-CERAMIC.TEMP;CC45 SL TAPG 50V 24-J	
	69099-611-150	ASSY REMOCON:P-5 PB BASIC		C327	61407-101-140	C-CERAMIC.TEMP;CC45 SL TAPG 50V 12-J	
	67642-602-510	DOOR BATTERY;ABS 94HB		C328	61417-109-210	C-CERAMIC.HK;CK45F TAPG 50V 104-Z	
C001	61637-203-470	C-ELEC;CEAP 10V 47M SA(5X11)		C329	61637-504-101	C-ELEC;CEAP 16V 100M SG(6.3X11)	
C002	61409-101-360	C-CERAMIC.TEMP;CC45 SL 50V 100-J		C330	61417-109-210	C-CERAMIC.HK;CK45F TAPG 50V 104-Z	
C003	61409-101-360	C-CERAMIC.TEMP;CC45 SL 50V 100-J		C331	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M	
C004	61409-101-360	C-CERAMIC.TEMP;CC45 SL 50V 100-J		C332	61637-504-221	C-ELEC;CEAP 16V 220M SV(8X9)	
D001	62169-406-482	DIODE;1N4148 SAMSUNG		C333	61417-109-210	C-CERAMIC.HK;CK45F TAPG 50V 104-Z	
D002	62169-406-482	DIODE;1N4148 SAMSUNG		C334	61417-109-210	C-CERAMIC.HK;CK45F TAPG 50V 104-Z	
D003	62169-406-482	DIODE;1N4148 SAMSUNG		C335	61417-104-170	C-CERAMIC.HK;CK45B TAPG 50V 820-K	
D004	62169-406-482	DIODE;1N4148 SAMSUNG		C336	61417-109-210	C-CERAMIC.HK;CK45F TAPG 50V 104-Z	
D005	62169-406-482	DIODE;1N4148 SAMSUNG		C337	61417-104-170	C-CERAMIC.HK;CK45B TAPG 50V 820-K	
D006	62169-406-482	DIODE;1N4148 SAMSUNG		C338	61637-206-100	C-ELEC;CEAP 35V 10M SA(5X11)	
IC001	62119-401-920	IC;M50560-155P		C339	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
LD001	62309-112-021	LED-IR;SS1R-5C		C389	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M	
Q001	62149-301-431	TRANSISTOR;KSC 1008-Y		C399	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M	
R001	61048-177-109	R-METAL FILM;RM 1/8TS 1-J		CN301	63349-062-580	CONNECTOR-WAFER;5268-09A	
XT001	64539-102-311	CERAMIC RESONATOR;CSB 455 EBL		CN302	63349-062-590	CONNECTOR-WAFER;5268-10A	
				CN303	63349-062-520	CONNECTOR-WAFER;5268-03A	
205	ASSY FUNCTION			CN304	63053-607-030	LEAD CONNECTOR ASSY;1429/1007#26	
	69370-601-202	ASSY FUNCTION : PX-990R		CN305	63053-209-113	LEAD CONNECTOR ASSY;1429 #26	
	69570-603-202	ASSY FUNCTION : PX-991R		CN306	63349-062-350	CONNECTOR-WAFER;5267-06A	
	69570-603-203	ASSY FUNCTION : PX-992R		CN308	63053-405-118	LEAD CONNECTOR ASSY;1061 #26	
C601	61637-504-101	C-ELEC;CEAP 16V 100M SG(6.3X11)		D301	62169-406-482	DIODE;1N4148 SAMSUNG	
C602	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-M		D302	62169-406-482	DIODE;1N4148 SAMSUNG	
CN601	63053-609-880	LEAD CONVERTOR ASSY;1429/1061 #26		D306	62169-406-482	DIODE;1N4148 SAMSUNG	
CN602	63053-110-118	LEAD CONNECTOR ASSY;1429 #26		D307	62169-406-482	DIODE;1N4148 SAMSUNG	
D601	62169-406-482	DIODE;1N4148 SAMSUNG		D308	62169-201-050	DIODE;1N4001 TAPG	
D602	62169-406-482	DIODE;1N4148 SAMSUNG		D311	62169-406-482	DIODE;1N4148 SAMSUNG	
D603	62169-406-482	DIODE;1N4148 SAMSUNG		D312	62169-406-482	DIODE;1N4148 SAMSUNG	
D604	62169-406-482	DIODE;1N4148 SAMSUNG		IC301	62119-401-752	IC;U83C51HB	
LD601	62309-110-340	LED;GL-3HD7/GL3HD8		IC302	62119-501-572	IC-LINEAR;LM358S(N.M)	
LD602	62309-110-350	LED;GL-3EG7/GL-3EG8		IC303	62119-401-348	IC;KS74HCTLS132	
LD603	62309-110-350	LED;GL-3EG7/GL-3EG8		IC304	62119-401-300	IC;KAB301(N.M)	
LD604	62309-110-350	LED;GL-3EG7/GL-3EG8		IC305	62119-103-676	IC;MN1280-Q	
LD605	62309-110-350	LED;GL-3EG7/GL-3EG8		IC306	62119-113-011	IC;MC78L09	
LD606	62309-110-350	LED;GL-3EG7/GL-3EG8		L301	62429-833-101	COIL-PEAKING AXIAL;8ALO4ST 101K	
LD607	62309-110-350	LED;GL-3EG7/GL-3EG8		L302	62429-833-101	COIL-PEAKING AXIAL;8ALO4ST 101K	
R601	61048-177-182	R-METAL FILM;RM 1/8TS 1.8K-J		L303	62429-833-101	COIL-PEAKING AXIAL;8ALO4ST 101K	
R602	61048-177-151	R-METAL FILM;RM 1/8TS 150-J		L304	62427-812-101	COIL-PEAKING;ELO606RA 100uH-J	
R603	61048-177-151	R-METAL FILM;RM 1/8TS 150-J		Q301	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
R604	61048-177-151	R-METAL FILM;RM 1/8TS 150-J		Q302	62139-301-311	TRANSISTOR;KTC 2120Y	
R605	61048-177-391	R-METAL FILM;RM 1/8TS 390-J		Q305	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
R607	61048-177-151	R-METAL FILM;RM 1/8TS 150-J		Q306	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
R608	61048-177-151	R-METAL FILM;RM 1/8TS 150-J		Q307	62137-103-380	TRANSISTOR;KSA 733-Y TAPG	
R609	61048-177-151	R-METAL FILM;RM 1/8TS 150-J		Q310	62137-302-740	TRANSISTOR;KSC 945-Y TAPG	
RM601	64529-312-051	REMOCON-MODULE;SV-06AMFC		Q311	62137-302-740	TRANSISTOR;KSC 945-Y TAPG	
SW601	63599-016-070	SW-TACT;EVQ-QS2 05K		Q312	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW602	63599-016-070	SW-TACT;EVQ-QS2 05K		Q313	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW603	63599-016-070	SW-TACT;EVQ-QS2 05K		Q314	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW604	63599-016-070	SW-TACT;EVQ-QS2 05K		Q315	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW605	63599-016-070	SW-TACT;EVQ-QS2 05K		Q316	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW606	63599-016-070	SW-TACT;EVQ-QS2 05K		Q317	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW607	63599-016-070	SW-TACT;EVQ-QS2 05K		R302	62137-701-012	TRANSISTOR;KSR 1003 TAPG	
SW608	63599-016-070	SW-TACT;EVQ-QS2 05K		R303	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J	
SW609	63599-016-070	SW-TACT;EVQ-QS2 05K		R304	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J	
SW610	63599-016-070	SW-TACT;EVQ-QS2 05K		R305	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J	
				R306	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J	
				R307	61048-177-272	R-METAL FILM;RM 1/8TS 2.7K-J	
				R308	61048-177-272	R-METAL FILM;RM 1/8TS 2.7K-J	
				R309	61048-177-472	R-METAL FILM;RM 1/8TS 4.7K-J	
				R310	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J	

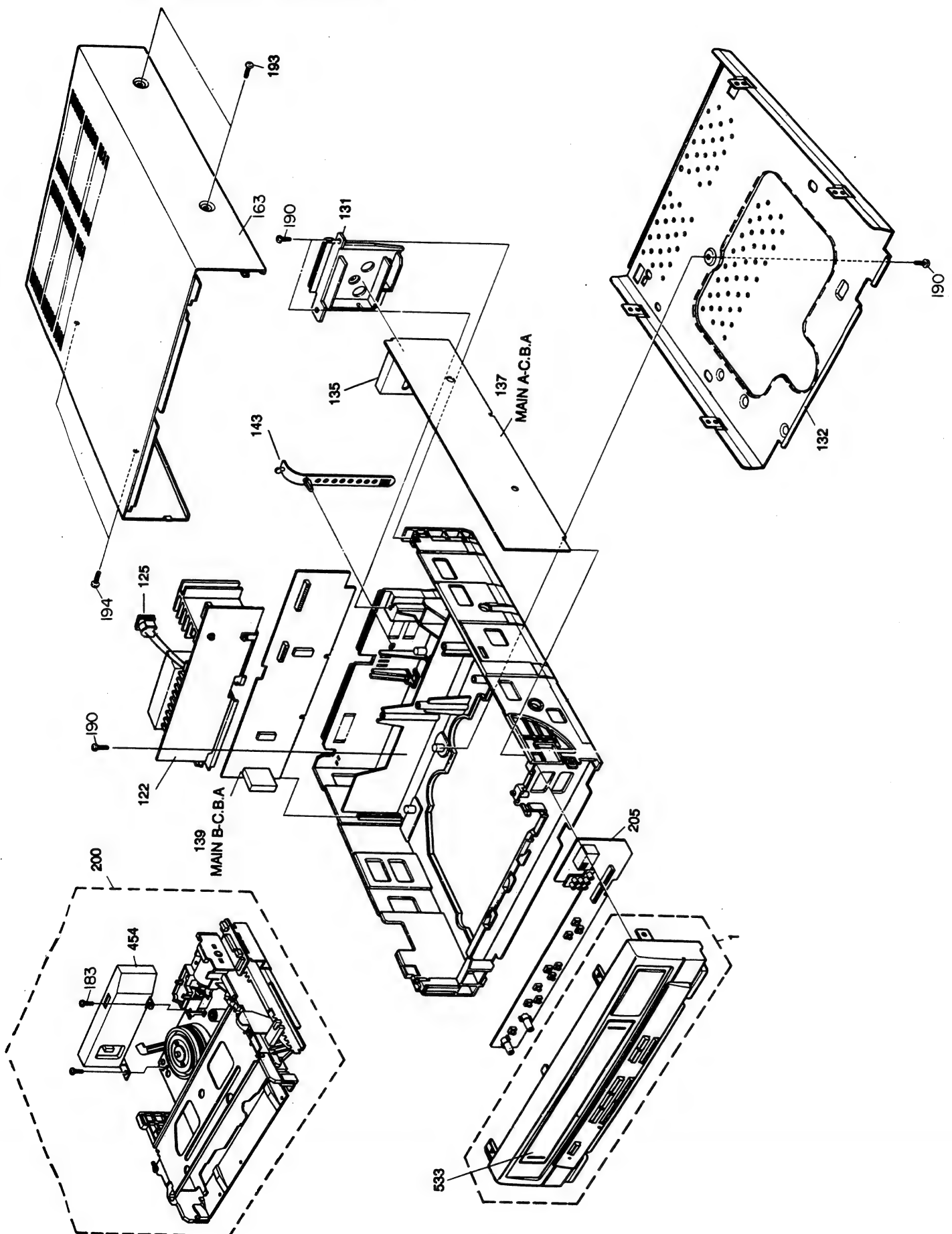
LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK	LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK
R311	61048-177-473	R-METAL FILM;RM 1/8TS 47K-J		R502	61048-177-101	R-METAL FILM;RM 1/8TS 100-J	
R312	61048-177-473	R-METAL FILM;RM 1/8TS 47K-J		R503	61048-177-104	R-METAL FILM;RM 1/8TS 100K-J	
R313	61048-177-473	R-METAL FILM;RM 1/8TS 47K-J		R504	61048-177-332	R-METAL FILM;RM 1/8TS 3.3K-J	
R314	61048-177-473	R-METAL FILM;RM 1/8TS 47K-J		R505	61048-177-104	R-METAL FILM;RM 1/8TS 100K-J	
R315	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J		R506	61048-177-302	R-METAL FILM;RM 1/8TS 3K-J	
R316	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J		R509	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J	
R317	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J		R510	61048-277-151	R-METAL FILM;RM 1/4T 150-J	
R318	61048-177-513	R-METAL FILM;RM 1/8TS 51K-J		R511	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J	
R319	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J		R512	61048-177-153	R-METAL FILM;RM 1/8TS 15K-J	
R320	61048-429-398	R-METAL OXIDE;RS 2P 3.9-J TAP6		139 ASSY MAIN B : P-5 PAL MESECAM			
R321	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J		VIDEO PARTS			
R322	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		C401	61637-208-478	C-ELEC;CEAP 50V 0.47M SA(5X11)	
R323	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		C402	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R324	61048-177-563	R-METAL FILM;RM 1/8TS 56K-J		C403	61637-206-100	C-ELEC;CEAP 35V 10M SA(5X11)	
R325	61048-177-822	R-METAL FILM;RM 1/8TS 8.2K-J		C404	61407-101-510	C-CERAMIC.TEMP;CC45 SL TAP6 50V 470-J	
R326	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C405	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R327	61048-177-583	R-METAL FILM;RM 1/8TS 68K-J		C406	61507-121-600	C-POLYESTER;CQ921M TAP6 100V 563-K	
R328	61048-177-822	R-METAL FILM;RM 1/8TS 8.2K-J		C407	61407-105-160	C-CERAMIC.TEMP;CC45 CH TAP6 50V 18-J	
R329	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		C408	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAP6	
R330	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		C409	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R331	61048-177-822	R-METAL FILM;RM 1/8TS 8.2K-J		C410	61407-101-360	C-CERAMIC.TEMP;CC45 SL TAP6 50V 100-J	
R332	61048-177-272	R-METAL FILM;RM 1/8TS 2.7K-J		C411	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAP6	
R333	61048-177-274	R-METAL FILM;RM 1/8TS 270K-J		C412	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R334	61048-177-204	R-METAL FILM;RM 1/8TS 200K		C413	61407-105-300	C-CERAMIC.TEMP;CC45 CH TAP6 50V 68-J	
R335	61048-177-272	R-METAL FILM;RM 1/8TS 2.7K-J		C414	61407-105-680	C-CERAMIC.TEMP;CC45 CH TAP6 50V 82-J	
R336	61048-177-821	R-METAL FILM;RM 1/8TS 820-J		C415	61407-105-260	C-CERAMIC.TEMP;CC45 CH TAP6 50V 47-J	
R337	61048-177-750	R-METAL FILM;RM 1/8TS 75-J		C416	61637-208-229	C-ELEC;CEAP 50V 2.2M SA (5X11)	
R338	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J		C417	61637-208-229	C-ELEC;CEAP 50V 2.2M SA (5X11)	
R339	61048-177-123	R-METAL FILM;RM 1/8TS 12K-J		C418	61407-101-240	C-CERAMIC.TEMP;CC45 SL TAP6 50V 33-J	
R340	61048-177-432	R-METAL FILM;RM 1/8TS 4.3K-J		C419	61407-105-320	C-CERAMIC.TEMP;CC45 CH TAP6 50V 200-J	
R341	61048-177-123	R-METAL FILM;RM 1/8TS 12K-J		C420	61407-105-280	C-CERAMIC.TEMP;CC45 CH TAP6 50V 56-J	
R342	61048-177-392	R-METAL FILM;RM 1/8TS 3.9K-J		C421	61407-105-860	C-CERAMIC.TEMP;CC45 CH TAP6 50V 10-D	
R343	61048-177-432	R-METAL FILM;RM 1/8TS 4.3K-J		C422	61637-208-478	C-ELEC;CEAP 50V 0.47M SA(5X11)	
R344	61048-177-123	R-METAL FILM;RM 1/8TS 12K-J		C423	61407-105-180	C-CERAMIC.TEMP;CC45 CH TAP6 50V 22-J	
R345	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		C424	61407-105-180	C-CERAMIC.TEMP;CC45 CH TAP6 50V 22-J	
R346	61048-177-302	R-METAL FILM;RM 1/8TS 3K-J		C425	61407-105-180	C-CERAMIC.TEMP;CC45 CH TAP6 50V 22-J	
R347	61048-177-302	R-METAL FILM;RM 1/8TS 3K-J		C426	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAP6	
R348	61048-177-823	R-METAL FILM;RM 1/8TS 82K-J		C427	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R351	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C428	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAP6	
R352	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C429	61607-421-120	C-ELECTROLYTIC;LC-0511-4.7-50-M TAP6	
R353	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C430	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R354	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C431	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R355	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C432	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
R356	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C433	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R357	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C434	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R358	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C435	61507-121-530	C-POLYESTER;CQ921M TAP6 100V 333-K	
R359	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C436	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R360	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C437	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
R361	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C438	61507-121-430	C-POLYESTER;CQ921M TAP6 100V 472-K	
R362	61048-177-432	R-METAL FILM;RM 1/8TS 4.3K-J		C439	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
R363	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		C441	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
R364	61048-177-432	R-METAL FILM;RM 1/8TS 4.3K-J		C442	61507-121-420	C-POLYESTER;CQ921M TAP6 100V 392-K	
R365	61048-177-432	R-METAL FILM;RM 1/8TS 4.3K-J		C443	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
R366	61048-177-512	R-METAL FILM;RM 1/8TS 5.1K-J		C444	61507-121-390	C-POLYESTER;CQ921M TAP6 100V 222-K	
R367	61048-177-274	R-METAL FILM;RM 1/8TS 270K-J		C445	61407-105-260	C-CERAMIC.TEMP;CC45 CH TAP6 50V 47-J	
R368	61048-177-154	R-METAL FILM;RM 1/8TS 150K-J		C446	61407-101-240	C-CERAMIC.TEMP;CC45 SL TAP6 50V 33-J	
R369	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		C447	61407-105-260	C-CERAMIC.TEMP;CC45 CH TAP6 50V 47-J	
VR301	61246-105-104	VR-BEHI;RH0615C 100K		C448	61407-105-690	C-CERAMIC.TEMP;CC45 CH TAP6 50V 51-J	
VR302	61246-105-104	VR-BEHI;RH0615C 100K		C449	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
XT301	64539-012-525	CRYSTAL;12.000MHZ		C450	61407-105-680	C-CERAMIC.TEMP;CC45 CH TAP6 50V 200-J	
AUDIO PARTS				C451	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
C501	61507-121-350	C-POLYESTER;CQ921M TAP6 100V 122-K		C452	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C503	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)		C454	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C504	61607-421-160	C-ELECTROLYTIC;LC-0511-22-16-M TAP6		C455	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C505	61507-121-530	C-POLYESTER;CQ921M TAP6 100V 333-K		C456	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C506	61637-208-339	C-ELEC;CEAP 50V 3.3M SA(5X11)		C457	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C507	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)		C458	61407-101-160	C-CERAMIC.TEMP;CC45 SL TAP6 50V 15-J	
C509	61407-117-228	C-CERAMIC.AXIAL;CAX SL TAP6 50V 223-Z		C459	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C510	61637-604-221	C-ELEC;CEAP 16V 220M SV(8X9)		C460	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C511	61637-206-100	C-ELEC;CEAP 35V 10M SA(5X11)		C462	61637-204-330	C-ELEC;CEAP 16V 33M SA(5X11)	
C512	61637-206-100	C-ELEC;CEAP 35V 10M SA(5X11)		C464	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C513	61637-206-100	C-ELEC;CEAP 35V 10M SA(5X11)		C465	61637-204-330	C-ELEC;CEAP 16V 33M SA(5X11)	
C514	61507-121-430	C-POLYESTER;CQ921M TAP6 100V 472-K		C466	61637-208-010	C-ELEC;CEAP 50V 1M SA(5X11)	
C515	61507-121-360	C-POLYESTER;CQ921M TAP6 50V 152-K		C467	61637-504-471	C-ELEC;CEAP 16V 470M SG(10X12.5)	
C516	61507-121-610	C-POLYESTER;CQ921M TAP6 100V 123-J		C468	61407-101-360	C-CERAMIC.TEMP;CC45 SL TAP6 50V 100-J	
C518	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N		C469	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
C519	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAP6		C470	61637-503-221	C-ELEC;CEAP 10V 220M SG(6.3X11)	
C520	61417-109-210	C-CERAMIC.HK;CK45F TAP6 50V 104-Z		C471	61407-101-360	C-CERAMIC.TEMP;CC45 SL TAP6 50V 100-J	
C521	61417-104-170	C-CERAMIC.HK;CK45B TAP6 50V 820-K		C472	61607-421-130	C-ELECTROLYTIC;LC-0511-47-16-M TAP6	
C522	61417-104-170	C-CERAMIC.HK;CK45B TAP6 50V 820-K		C473	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAP6 16V 0.01-N	
CN501	63053-917-505	LEAD CONNECTOR ASSY;2547 #26 5264-5264		C474	61637-504-101	C-ELEC;CEAP 16V 100M SG(6.3X11)	
CN501	63349-062-320	CONNECTOR-WAFER;5267-03A STICK		C475	61407-101-490	C-CERAMIC.TEMP;CC45 SL TAP6 50V 390-J	
CN502	63349-062-620	CONNECTOR WAFER;5268-13A		C476	61507-121-490	C-POLYESTER;CQ921M TAP6 100V 183-K	
IC501	62109-103-220	IC;KA2221(N.M)		C477	61407-101-200	C-CERAMIC.TEMP;CC45 SL TAP6 50V 22-J	
LS01	62429-010-280	COIL-PEAKING;80AH-22MH		CN401	63349-062-360	CONNECTOR-WAFER;5267-07A STICK	
Q503	62149-401-265	TRANSISTOR;2SD 1468 TAP6		CN402	63053-413-510	LEAD CONNECTOR ASSY;2547 #26 5264-5395	
Q504	62149-401-265	TRANSISTOR;2SD 1468 TAP6		D401	62169-406-482	DIODE;1N4148 SAMSUNG	
R501	61048-177-333	R-METAL FILM;RM 1/8TS 33K-J					

LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK	LOCA.NO	PART-NUMBER	DESCRIPTION;SPECIFICATION	REMARK
D402	62169-406-482	DIODE;1N4148 SAMSUNG		R469	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J	
D403	62169-406-482	DIODE;1N4148 SAMSUNG		R470	61048-177-821	R-METAL FILM;RM 1/8TS 820-J	
FL401	64529-416-023	FILTER-LC DIP TYPE;SLP+EQ-C		R471	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J	
FL402	64529-401-200	FILTER-LC;SFB 4141		R472	61048-177-682	R-METAL FILM;RM 1/8TS 6.8K-J	
FL403	64529-310-010	FILTER-CERAMIC;SFE 4.5MB		R473	61048-177-223	R-METAL FILM;RM 1/8TS 22K-J	
FL405	64529-006-011	DELAY LINE;MS-31PC-5K		VR401	61246-105-472	VR-SEMI;RH0615C 4.7K	
IC401	62119-401-346	IC;KAB113		VR402	61246-105-472	VR-SEMI;RH0615C 4.7K	
IC402	62119-101-755	IC;MSM6965-3RS		VR403	61048-177-682	R-METAL FILM;RM 1/8TS 6.8K-J	
IC403	62119-101-735	IC;TA8644N		XT401	64539-012-040	CRYSTAL;4.433619MHZ	
IC404	62119-103-694	IC;BA7025L					
L401	62429-833-101	COIL-PEAKING AXIAL;8AL04ST 101K		454	69512-603-202	ASSY PREAMP;P-5 PAL MESECAM	
L402	62427-812-151	COIL-PEAKING;ELO606RA 150uH-J					
L403	62427-812-680	COIL-PEAKING;ELO606RA 68uH-J		C801	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
L404	62427-812-220	COIL-PEAKING;ELO606RA 22uH-J		C802	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
L405	62427-812-470	COIL-PEAKING;ELO606RA 47uH-J		C803	61407-101-240	C-CERAMIC.TEMP;CC45 SL TAPG 50V 33-J	
L406	62427-812-180	COIL-PEAKING;ELO606RA 18uH-J		C804	61407-101-240	C-CERAMIC.TEMP;CC45 SL TAPG 50V 33-J	
L407	62427-812-100	COIL-PEAKING;ELO606RA 10uH-J		C805	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
L408	62427-812-470	COIL-PEAKING;ELO606RA 47uH-J		C806	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
L409	62427-812-150	COIL-PEAKING;ELO606RA 15uH-J		C807	61617-404-470	C-ELEC;CEAP 16V 47M RSS(6.3X7)	
L410	62429-833-101	COIL-PEAKING AXIAL;8AL04ST 101K		C808	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
L411	62429-010-280	COIL-PEAKING;80AM-22mH		C809	61407-101-510	C-CERAMIC.TEMP;CC45 SL TAPG 50V 470-J	
L412	62427-812-150	COIL-PEAKING;ELO606RA 15uH-J		C810	61617-408-479	C-ELEC;CEAP 50V 4.7M RSS(4X7)	
Q401	62137-302-740	TRANSISTOR;KSC 945-Y TAPG		C811	61407-105-260	C-CERAMIC.TEMP;CC45 CH TAPG 50V 47-J	
Q402	62137-302-740	TRANSISTOR;KSC 945-Y TAPG		C812	61617-404-470	C-ELEC;CEAP 16V 47M RSS(6.3X7)	
Q403	62137-103-380	TRANSISTOR;KSA 733-Y TAPG		C813	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
Q404	62137-701-012	TRANSISTOR;KSR 1003 TAPG		C814	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
Q405	62137-302-740	TRANSISTOR;KSC 945-Y TAPG		C815	61407-101-470	C-CERAMIC.TEMP;CC45 SL TAPG 50V 300-J	
Q407	62137-302-740	TRANSISTOR;KSC 945-Y TAPG		C816	61407-101-510	C-CERAMIC.TEMP;CC45 SL TAPG 50V 470-J	
Q408	62137-302-740	TRANSISTOR;KSC 945-Y TAPG		C817	61407-101-160	C-CERAMIC.TEMP;CC45 SL TAPG 50V 15-J	
Q411	62137-302-740	TRANSISTOR;KSC 945-Y TAPG		C818	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
Q412	62137-103-380	TRANSISTOR;KSA 733-Y TAPG		C819	61407-101-380	C-CERAMIC.TEMP;CC45 SL TAPG 50V 120-J	
R401	61048-177-153	R-METAL FILM;RM 1/8TS 15K-J		C820	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
R402	61048-177-474	R-METAL FILM;RM 1/8TS 470K-J		C821	61407-105-320	C-CERAMIC.TEMP;CC45 CH TAPG 50V 82-J	
R403	61048-177-472	R-METAL FILM;RM 1/8TS 4.7K-J		C822	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
R404	61048-177-472	R-METAL FILM;RM 1/8TS 5.6K-J		C823	61507-121-450	C-POLYESTER;CQ921M TAPG 50V 682-K	
R405	61048-177-562	R-METAL FILM;RM 1/8TS 15K-J		C824	61617-404-470	C-ELEC;CEAP 16V 47M RSS(6.3X7)	
R406	61048-177-153	R-METAL FILM;RM 1/8TS 15K-J		C825	61407-117-228	C-CERAMIC.AXIAL;CAX SL TAPG 50V 228-Z	
R407	61048-177-183	R-METAL FILM;RM 1/8TS 18K-J		C826	61407-105-320	C-CERAMIC.TEMP;CC45 CH TAPG 50V 82-J	
R408	61048-177-223	R-METAL FILM;RM 1/8TS 22K-J		C827	61407-117-104	C-CERAMIC.AXIAL;CAX Y TAPG 16V 0.01-N	
R409	61048-177-391	R-METAL FILM;RM 1/8TS 390-J		CN801	63348-231-040	CONNECTOR-WAFER;52045-0410	
R410	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		CN802	63053-407-212	LEAD CONNECTOR ASSY;1533 #26 5395-5264	
R411	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		D801	62169-406-482	DIODE;1N4148 SAMSUNG	
R412	61048-177-472	R-METAL FILM;RM 1/8TS 4.7K-J		IC801	62109-301-680	IC;UPC2313CA	
R414	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		L801	62427-812-220	COIL-PEAKING;ELO606RA 22uH-J	
R415	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J		L802	62427-812-330	COIL-PEAKING;ELO606RA 33uH-J	
R416	61048-177-272	R-METAL FILM;RM 1/8TS 2.7K-J		L803	62427-812-330	COIL-PEAKING;ELO606RA 33uH-J	
R417	61048-177-124	R-METAL FILM;RM 1/8TS 120K-J		L804	62429-833-101	COIL-PEAKING AXIAL;8AL04ST 101K	
R418	61048-177-475	R-METAL FILM;RM 1/8TS 4.7M-J		L805	62427-812-220	COIL-PEAKING;ELO606RA 22uH-J	
R419	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J		L806	62427-812-220	COIL-PEAKING;ELO606RA 22uH-J	
R420	61048-177-682	R-METAL FILM;RM 1/8TS 6.8K-J		L807	62427-812-181	COIL-PEAKING;ELO606RA 180uH-J	
R421	61048-177-202	R-METAL FILM;RM 1/8TS 2K-J		L808	62427-812-829	COIL-PEAKING;ELO606RA 8.2uH-J	
R422	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		Q801	62137-302-740	TRANSISTOR;KSC 945-Y TAPG	
R424	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		Q802	62137-302-740	TRANSISTOR;KSC 945-Y TAPG	
R425	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J		Q803	62137-103-380	TRANSISTOR;KSA 733-Y TAPG	
R426	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		Q804	62137-302-740	TRANSISTOR;KSC 945-Y TAPG	
R427	61048-177-182	R-METAL FILM;RM 1/8TS 1.8K-J		R801	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J	
R428	61048-177-562	R-METAL FILM;RM 1/8TS 5.6K-J		R802	61048-177-332	R-METAL FILM;RM 1/8TS 3.3K-J	
R429	61048-177-181	R-METAL FILM;RM 1/8TS 180-J		R803	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J	
R430	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J		R804	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J	
R431	61048-177-272	R-METAL FILM;RM 1/8TS 2.7K-J		R805	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J	
R432	61048-177-223	R-METAL FILM;RM 1/8TS 22K-J		R806	61048-177-561	R-METAL FILM;RM 1/8TS 560-J	
R433	61048-177-333	R-METAL FILM;RM 1/8TS 33K-J		R807	61048-177-562	R-METAL FILM;RM 1/8TS 5.6K-J	
R434	61048-177-202	R-METAL FILM;RM 1/8TS 2K-J		R808	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J	
R435	61048-177-392	R-METAL FILM;RM 1/8TS 3.9K-J		R809	61048-177-331	R-METAL FILM;RM 1/8TS 330-J	
R436	61048-177-333	R-METAL FILM;RM 1/8TS 33K-J		R810	61048-177-681	R-METAL FILM;RM 1/8TS 680-J	
R437	61048-177-471	R-METAL FILM;RM 1/8TS 470-J		R811	61048-177-152	R-METAL FILM;RM 1/8TS 1.5K-J	
R438	61048-177-474	R-METAL FILM;RM 1/8TS 470K-J		R812	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J	
R439	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J		R813	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J	
R440	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		R814	61048-177-391	R-METAL FILM;RM 1/8TS 390-J	
R444	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		R815	61048-177-391	R-METAL FILM;RM 1/8TS 390-J	
R445	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		R816	61048-177-331	R-METAL FILM;RM 1/8TS 330-J	
R446	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		R817	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J	
R447	61048-177-393	R-METAL FILM;RM 1/8TS 39K-J		R818	61048-177-564	R-METAL FILM;RM 1/8TS 560K-J	
R448	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		R819	61048-177-333	R-METAL FILM;RM 1/8TS 33K-J	
R449	61048-177-153	R-METAL FILM;RM 1/8TS 15K-J		R820	61048-177-333	R-METAL FILM;RM 1/8TS 33K-J	
R450	61048-177-391	R-METAL FILM;RM 1/8TS 390-J		R821	61048-177-151	R-METAL FILM;RM 1/8TS 150-J	
R451	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J		R822	61048-177-472	R-METAL FILM;RM 1/8TS 4.7K-J	
R452	61048-177-391	R-METAL FILM;RM 1/8TS 390-J		R823	61048-177-183	R-METAL FILM;RM 1/8TS 18K-J	
R453	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J		R824	61048-177-683	R-METAL FILM;RM 1/8TS 68K-J	
R454	61048-177-122	R-METAL FILM;RM 1/8TS 1.2K-J					
R455	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J					
R456	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J					
R458	61048-177-103	R-METAL FILM;RM 1/8TS 10K-J					
R459	61048-177-223	R-METAL FILM;RM 1/8TS 22K-J					
R460	61048-177-151	R-METAL FILM;RM 1/8TS 150-J					
R461	61048-177-222	R-METAL FILM;RM 1/8TS 2.2K-J					
R462	61048-177-154	R-METAL FILM;RM 1/8TS 150K-J					
R466	61048-177-680	R-METAL FILM;RM 1/8TS 68K-J					
R467	61048-177-560	R-METAL FILM;RM 1/8TS 56K-J					
R468	61048-177-102	R-METAL FILM;RM 1/8TS 1K-J					

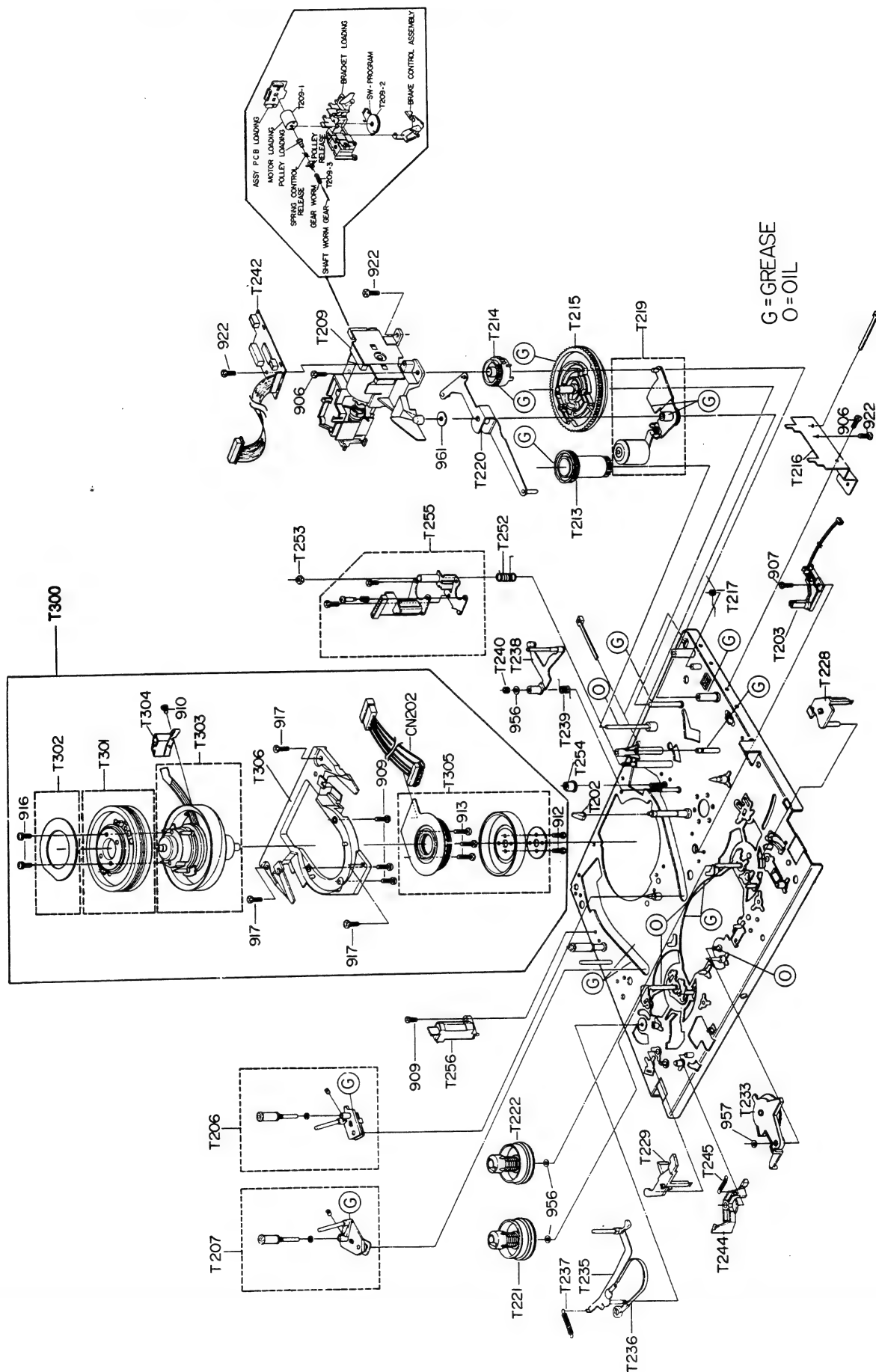
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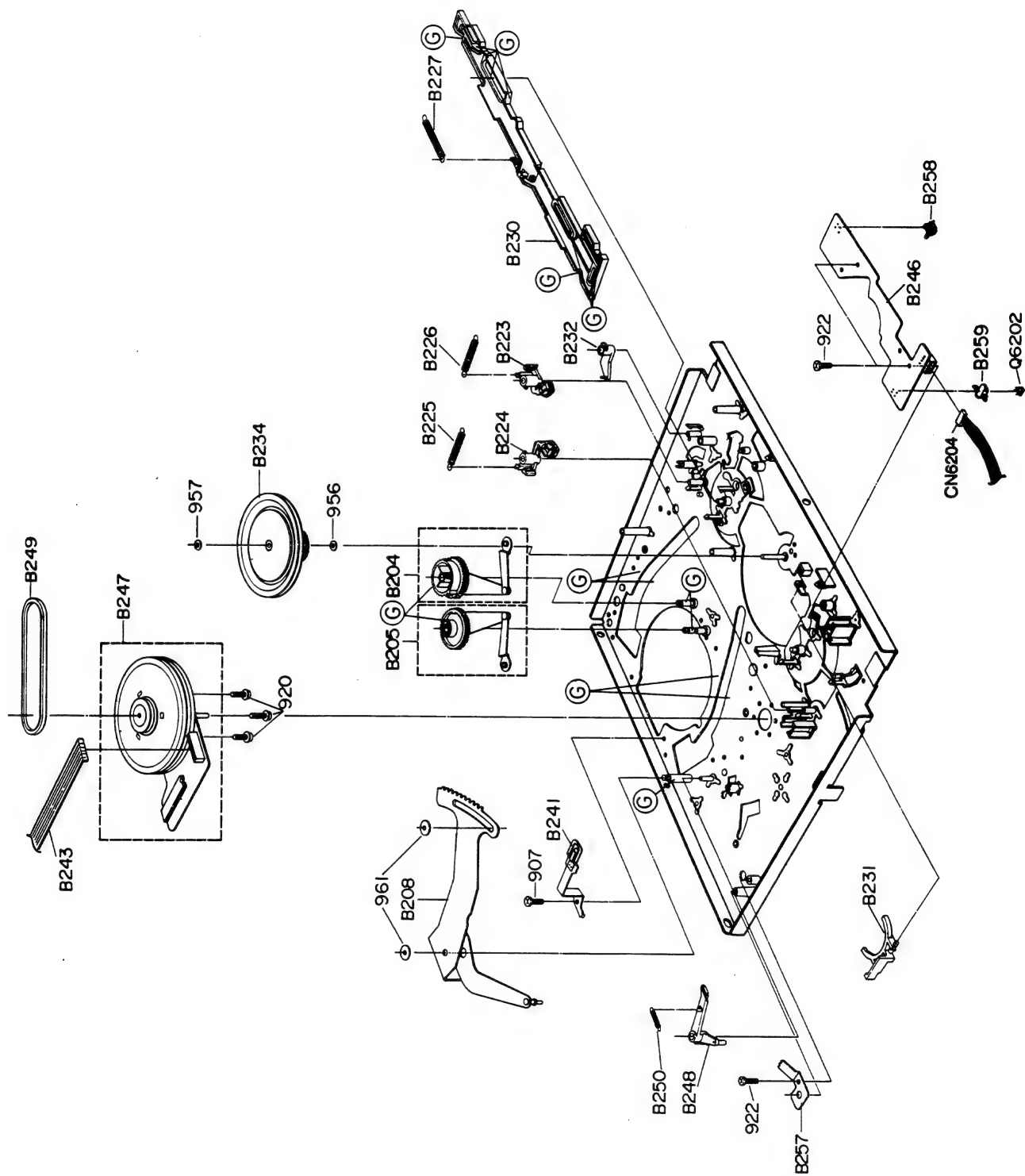
7-1. Instrument Assembly



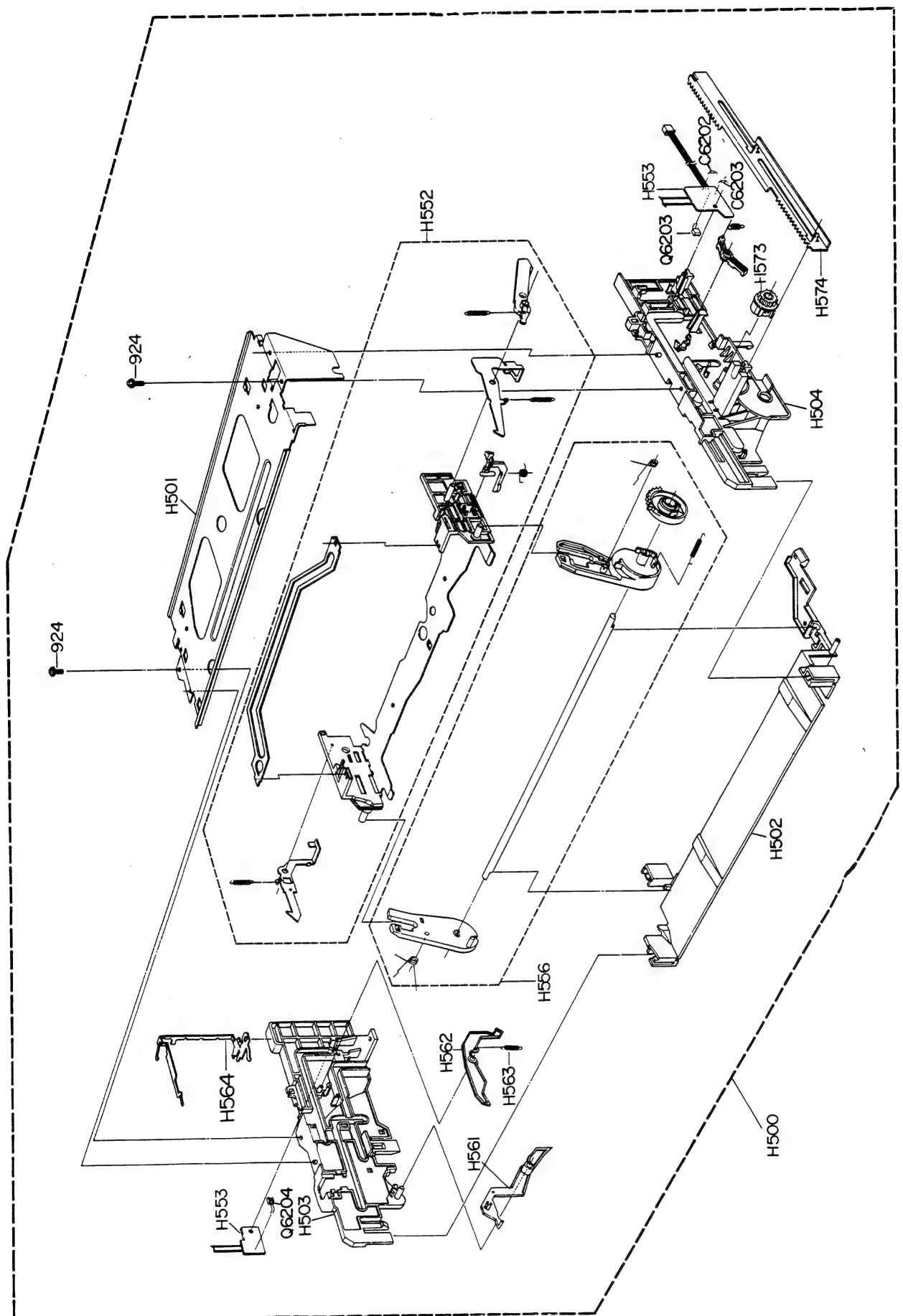
7-2. Transport Mechanism Assembly



7-3. Bottom Side Mechanism Assembly



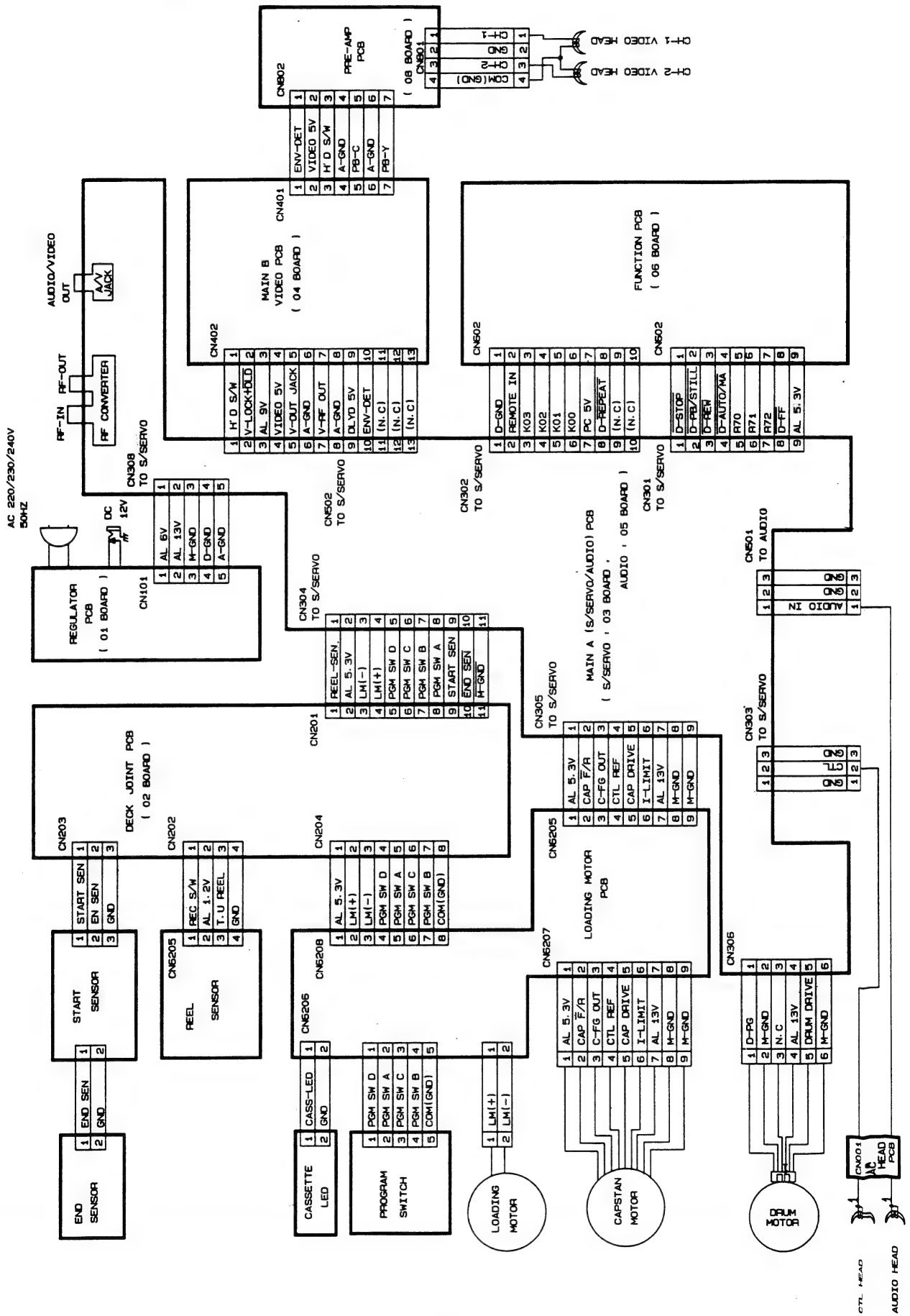
7-4. Housing Assembly



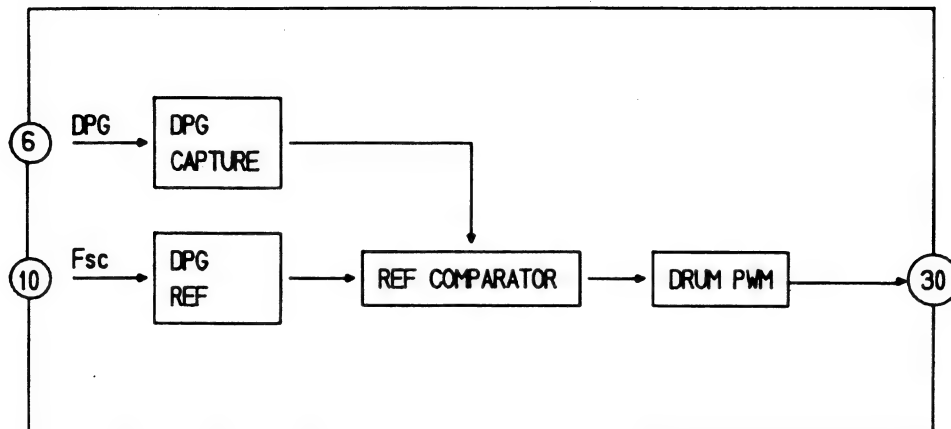
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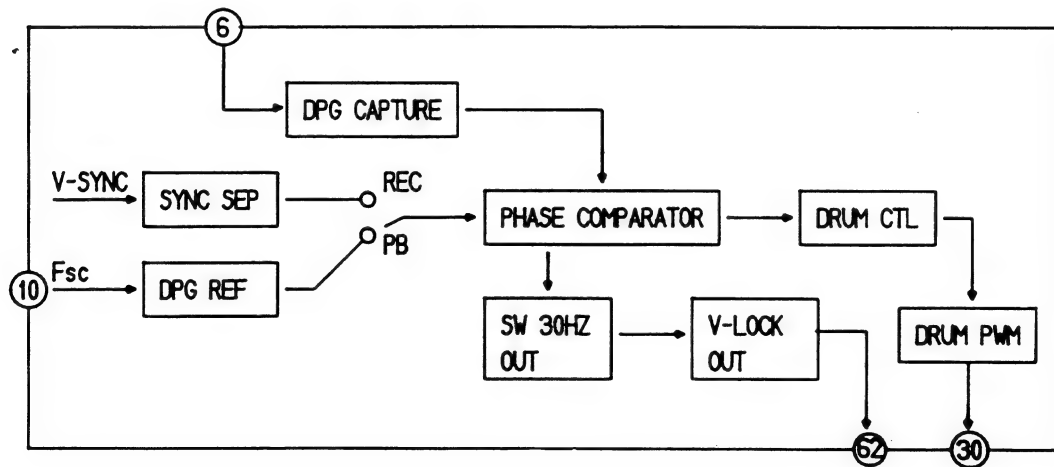
8-1. Total Wiring Diagram



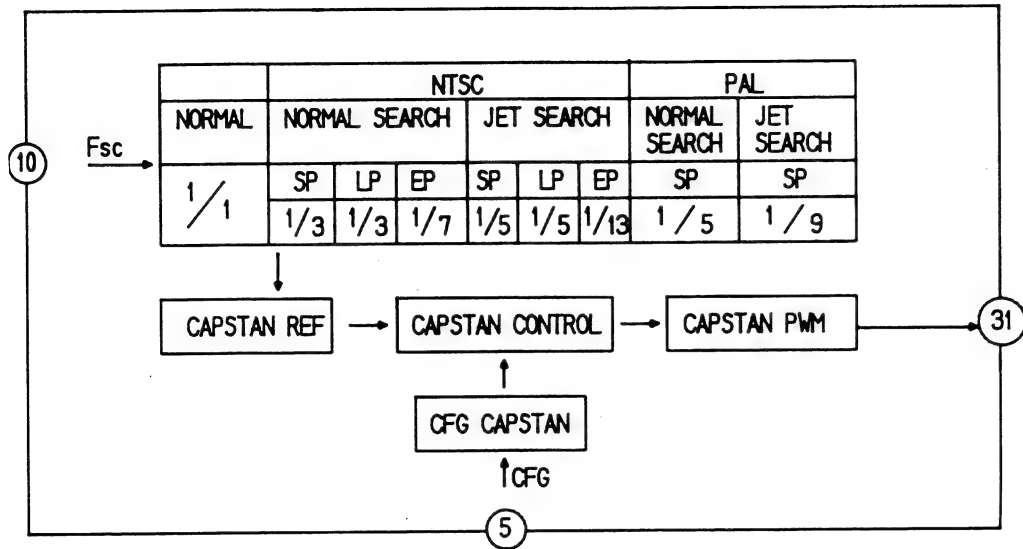
8-2. Drum Speed Control



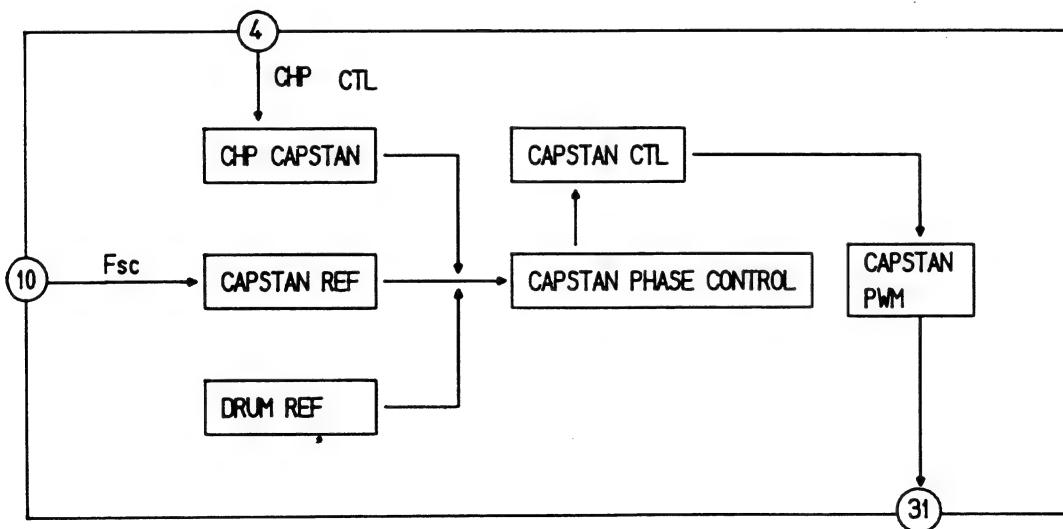
8-3. Drum Phase Control



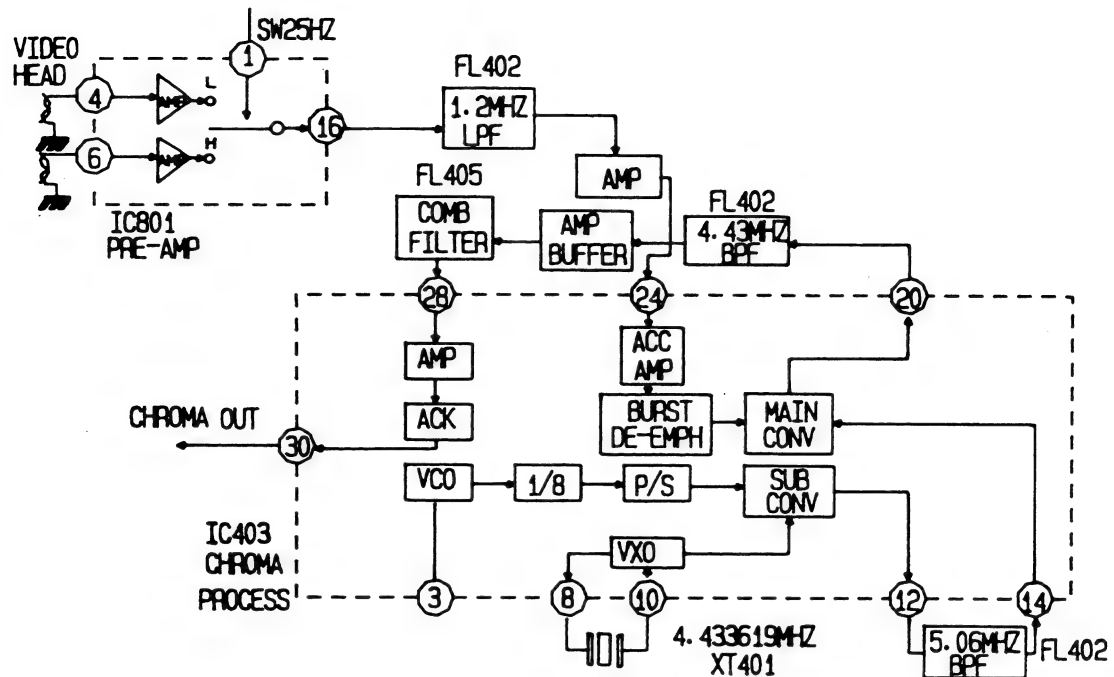
8-4. Capstan Speed Control



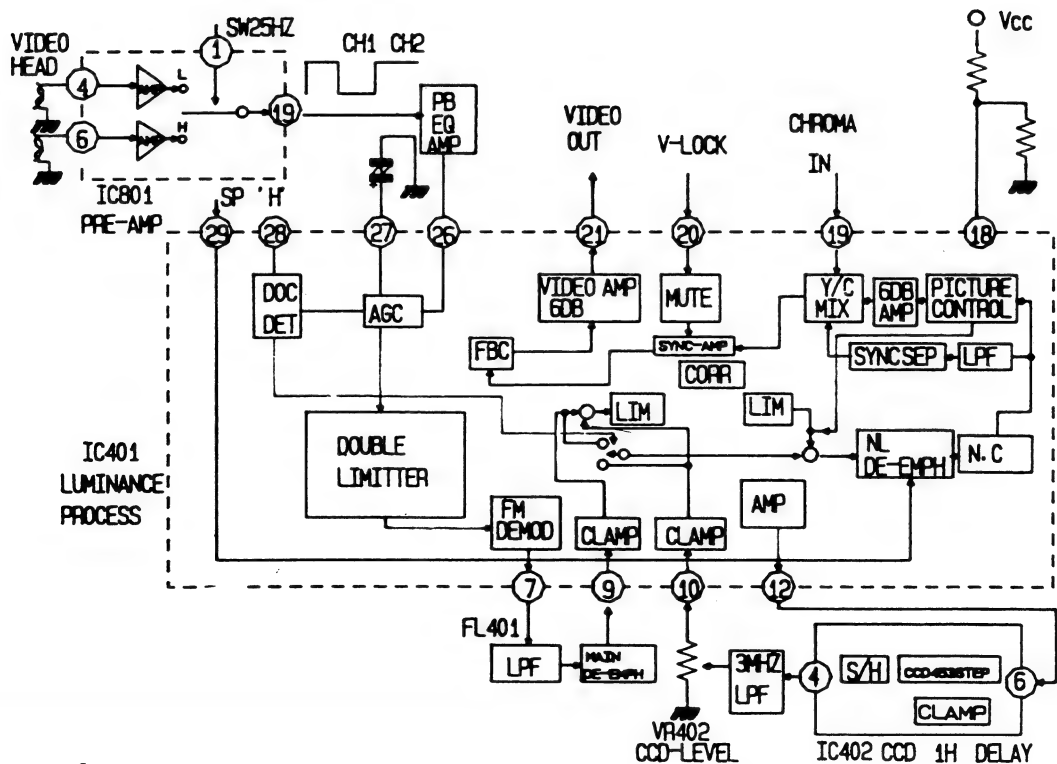
8-5. Capstan Phase Control



8-6. Luminance Playback Process



8-7. Chrominance Playback Process

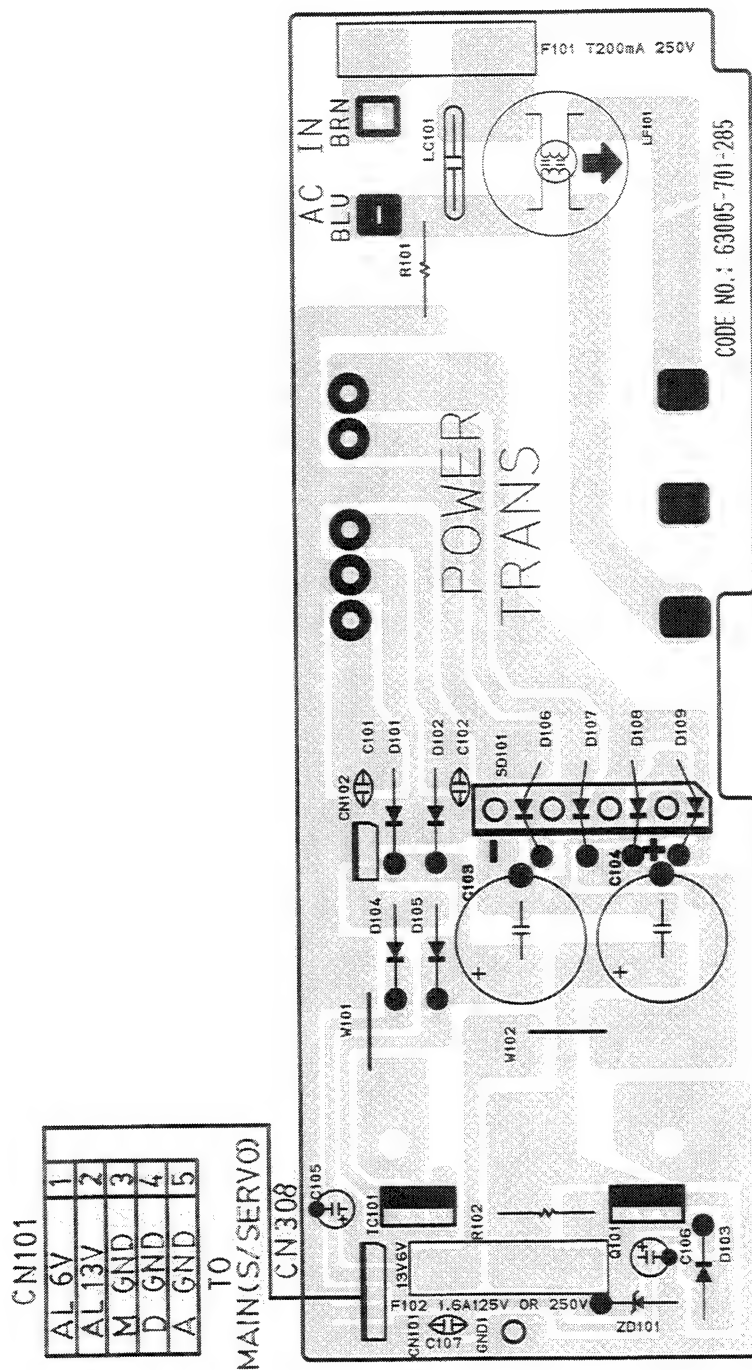


9. CIRCUIT BOARDS

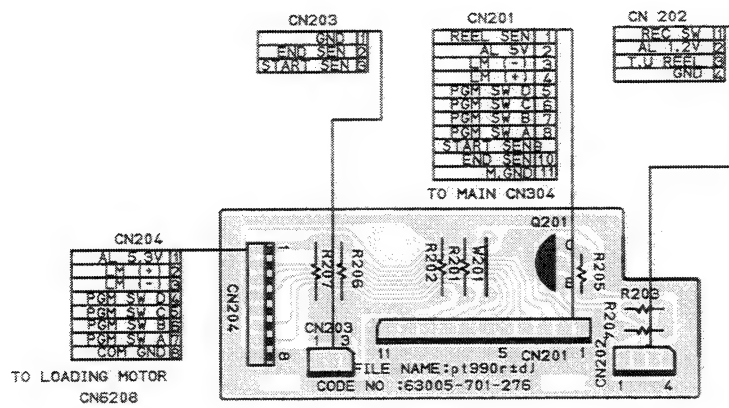
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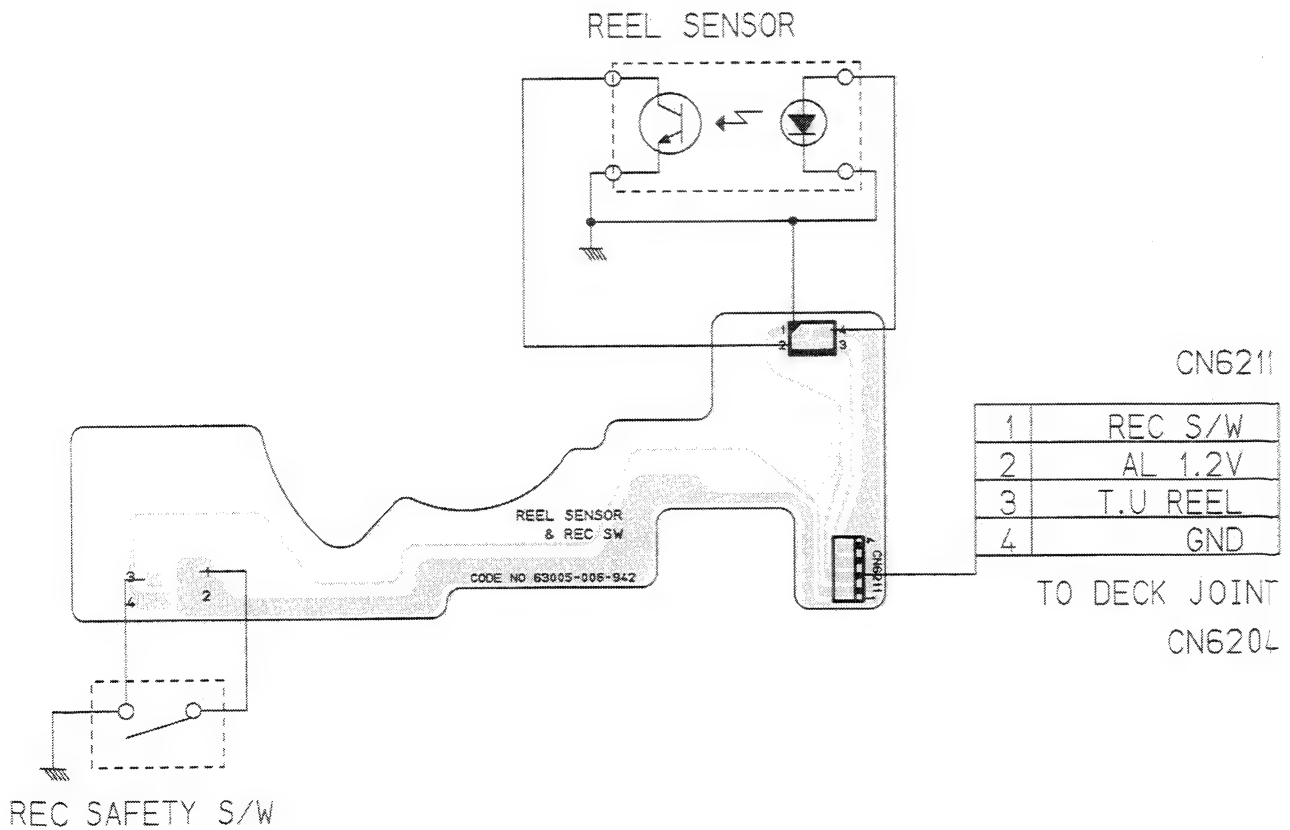
9-1. Regulator (Top Side)



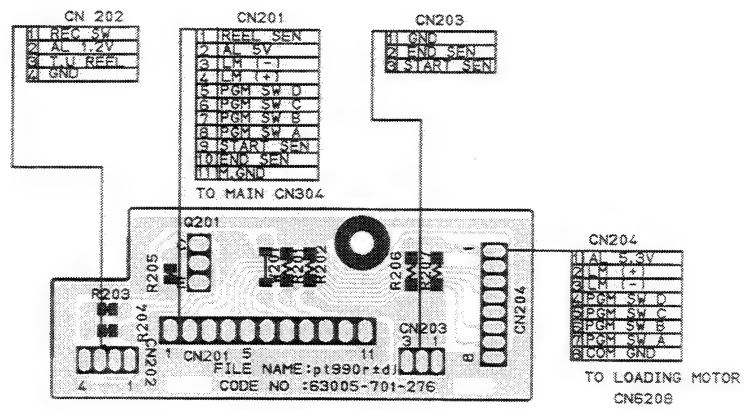
9-2. Deck Joint (Top Side)



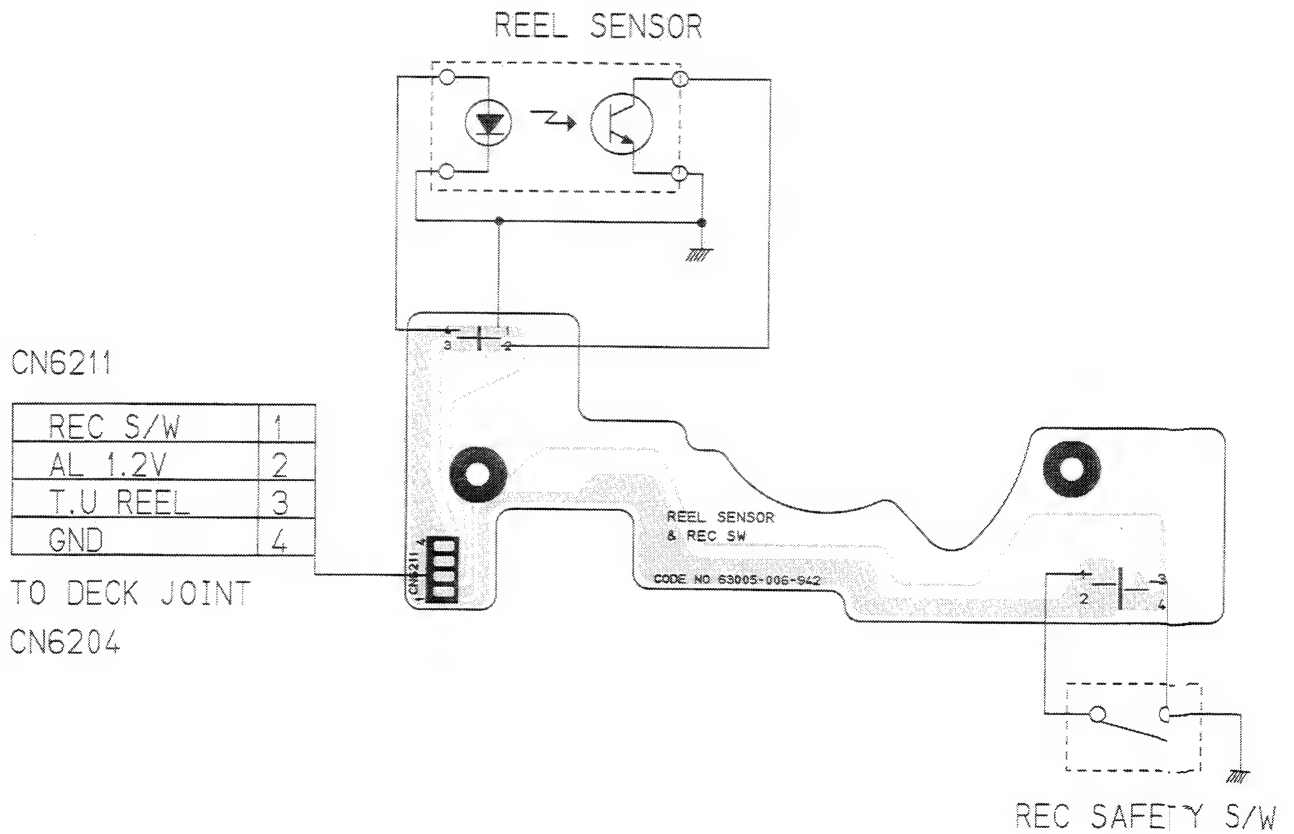
9-3. Reel Sensor (Top Side)



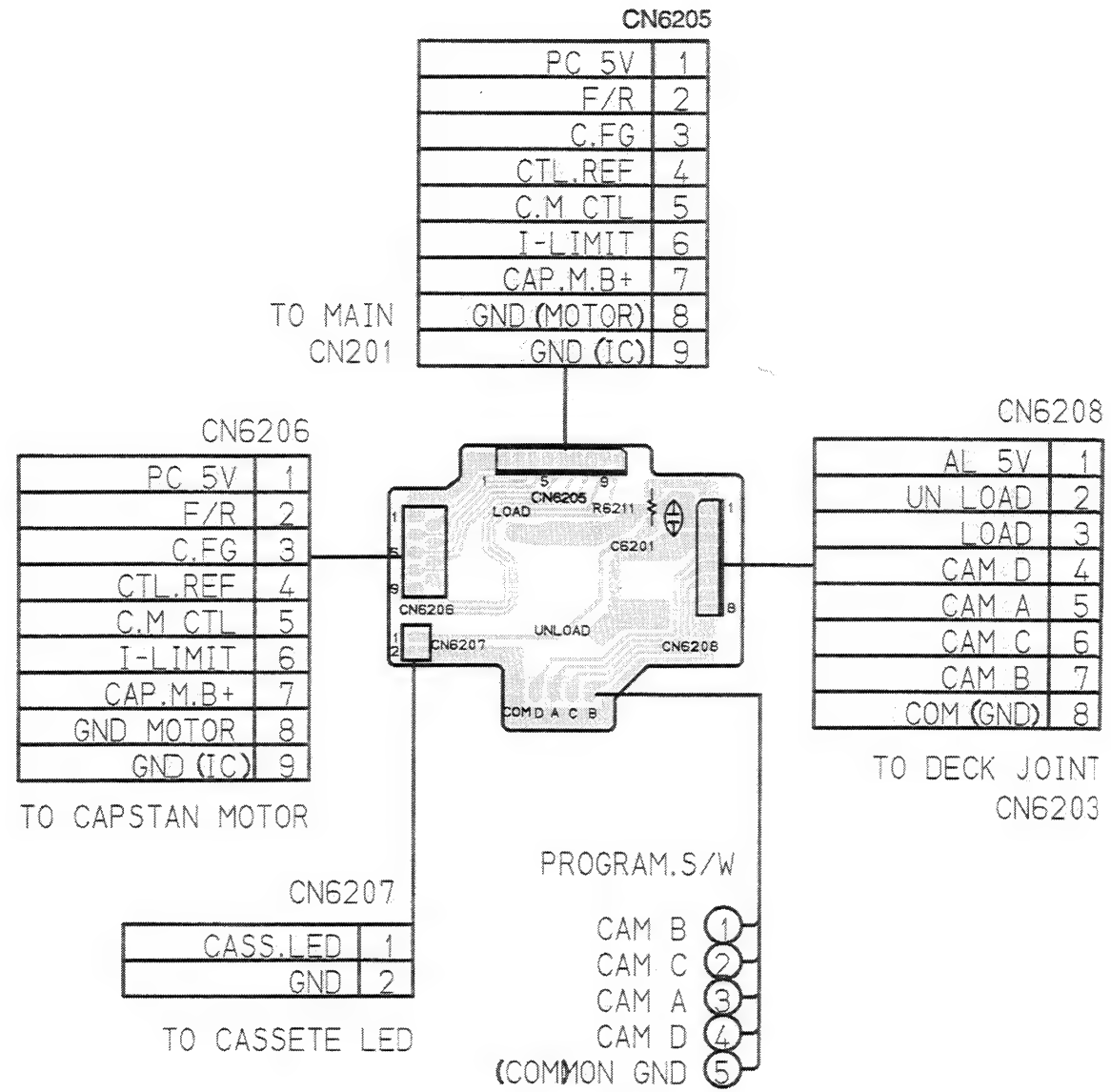
9-2. Deck Joint (Bottom Side)



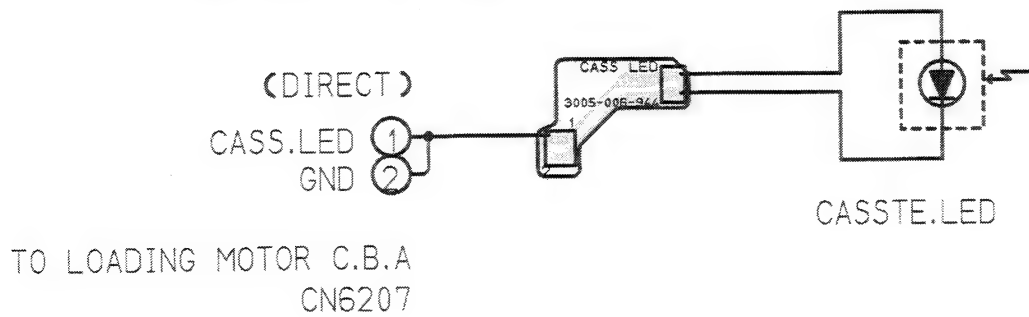
9-3. Reel Sensor (Bottom Side)



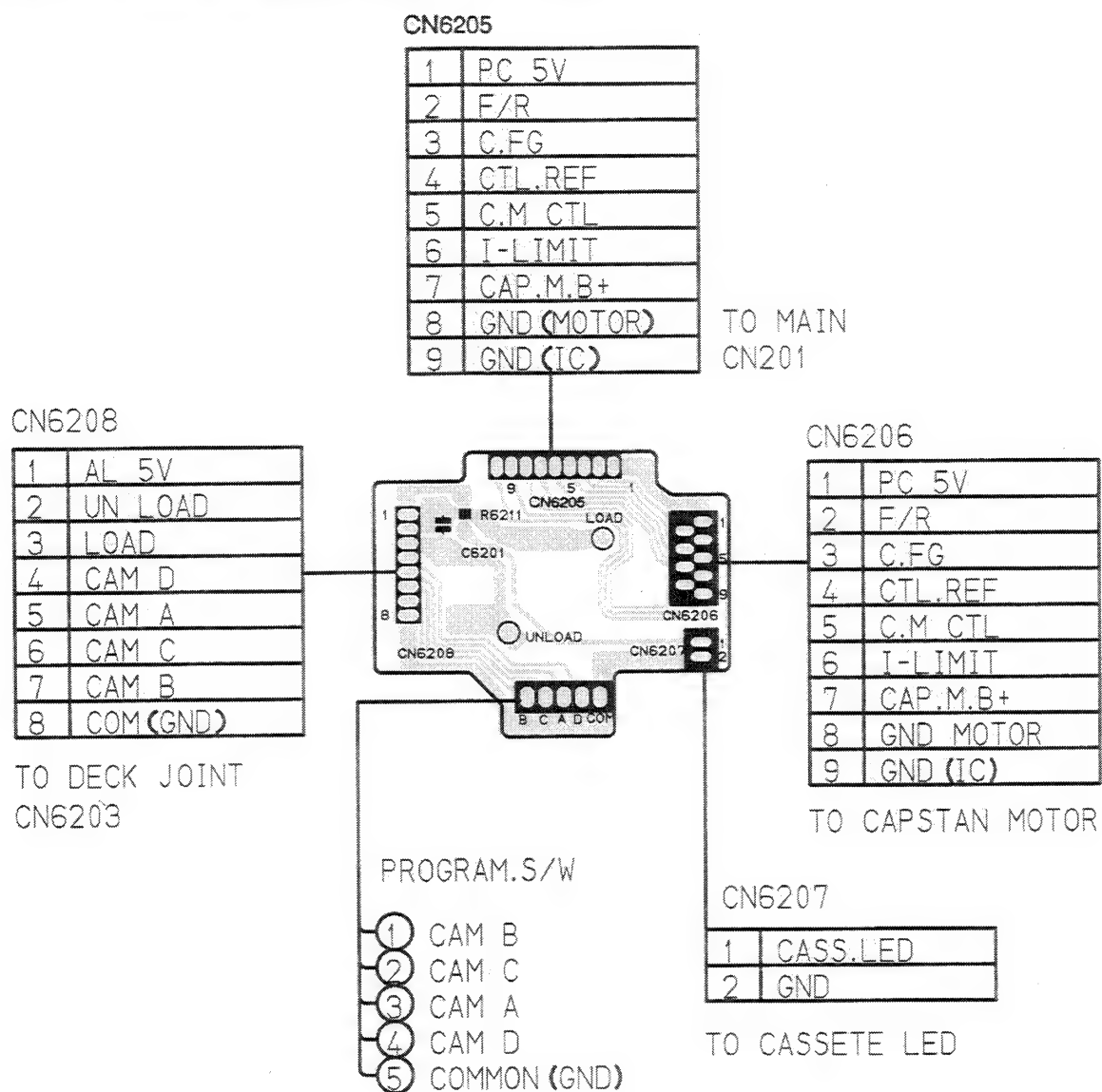
9-4. Loading Motor (Top Side)



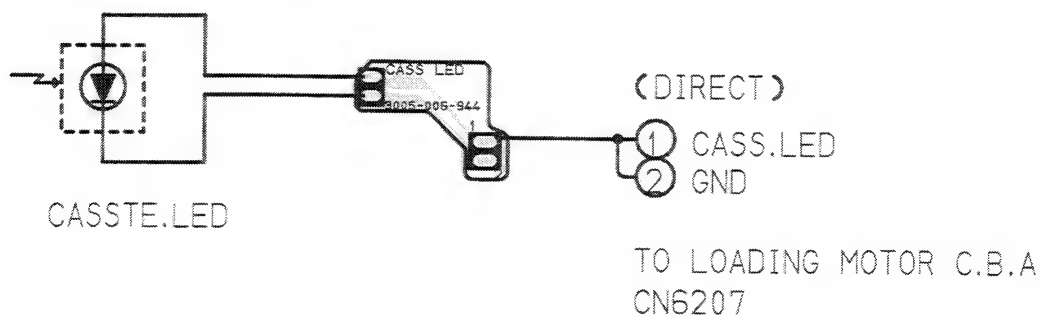
9-5. Cassette LED (Top Side)



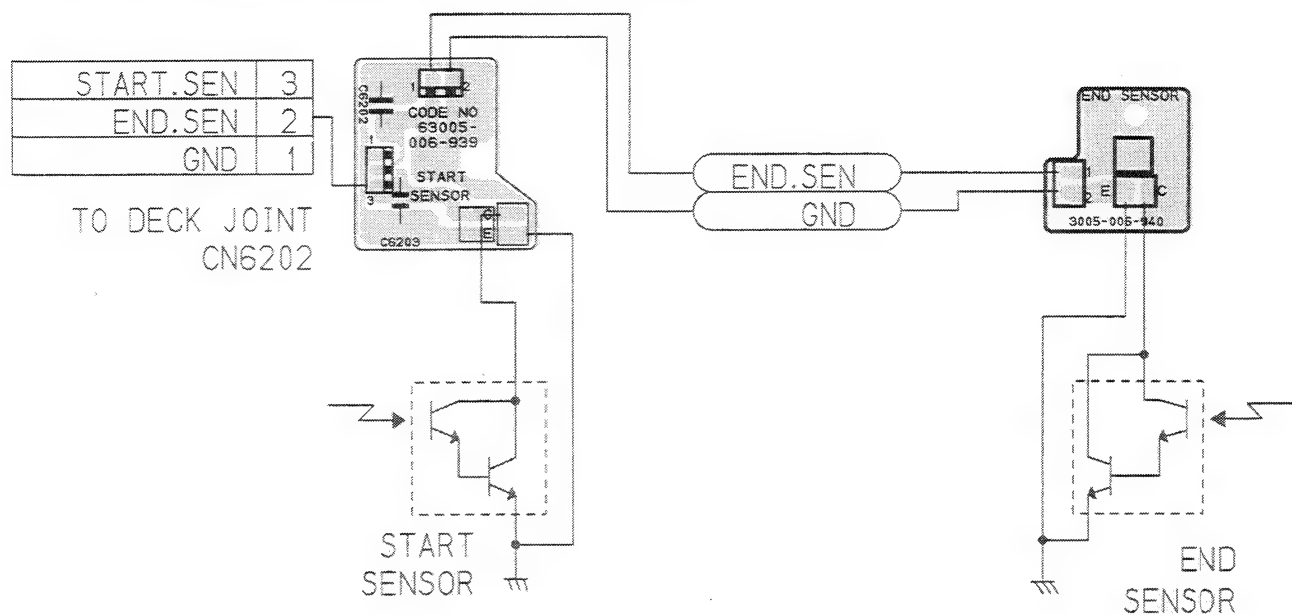
9-4. Loading Motor (Bottom Side)



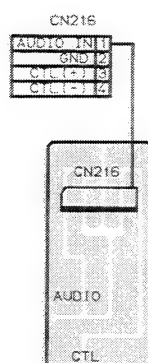
9-5. Cassette LED (Bottom Side)



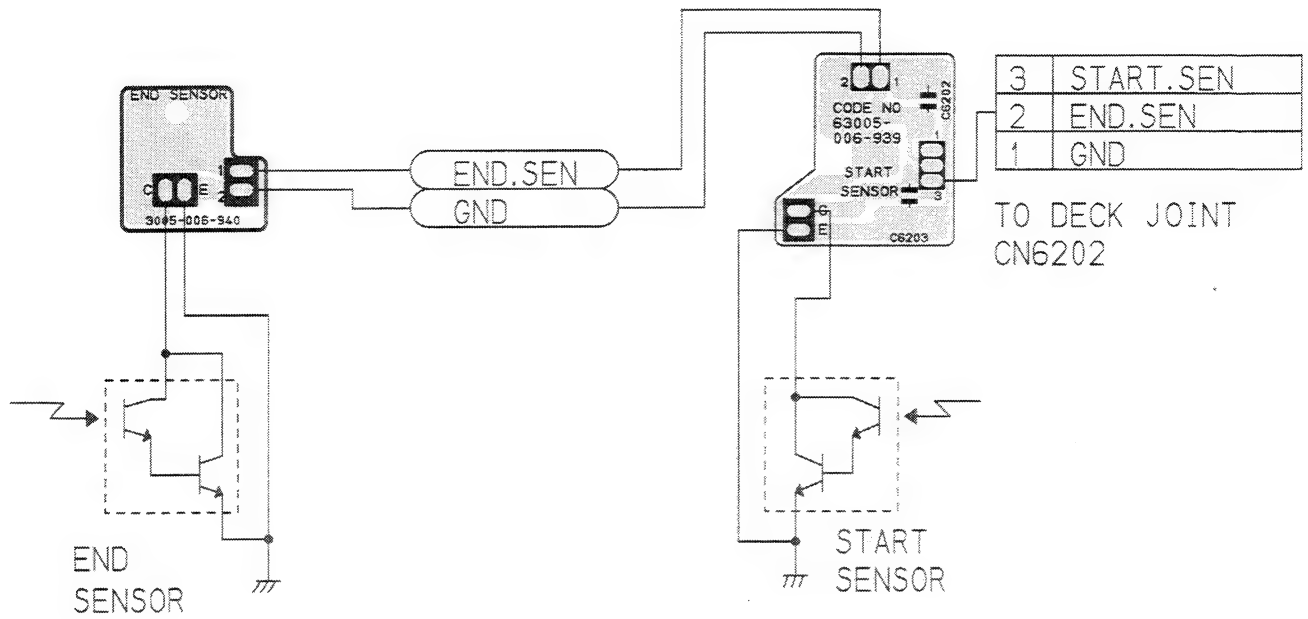
9-6. Start / End Sensor (Top Side)



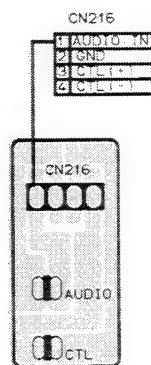
9-7. A/C Head (Top Side)



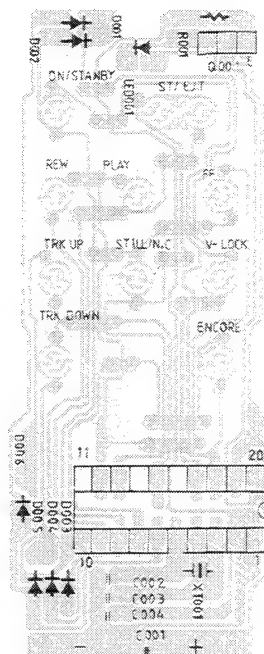
9-6. Start / End Sensor (Bottom Side)



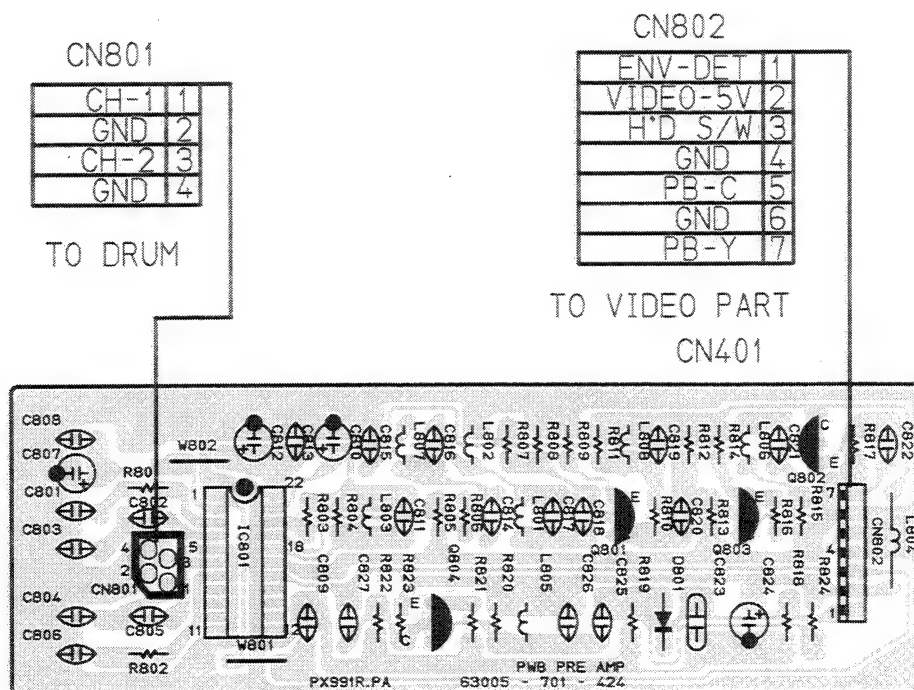
9-7. A/C Head (Bottom Side)



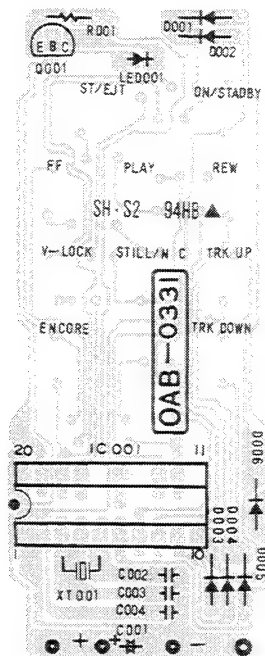
9-8. Remote Control (Top Side)



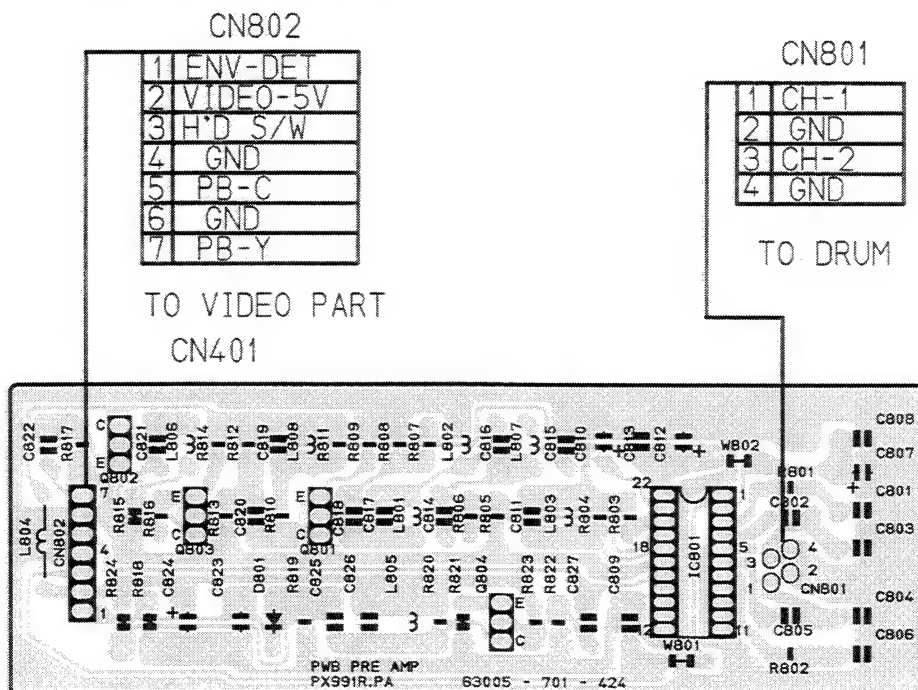
9-9. Pre-Amp (Top Side)



9-8. Remote Control (Bottom Side)



9-9. Pre-Amp (Bottom Side)



CN306

CN303

CN308

CN502

1	D-PG
2	M-GND
3	N.C
4	AL13V
5	D.DRIVE
7	MGND

FROM
DRUM MOTOR
CN1

1	CTL (+)
2	CTL (-)
3	D.GND

FROM
CTL H/D
CN001

1	AL6V
2	AL13V
3	M-GND
4	D-GND
5	A-GND

FROM REGULATOR
CN101

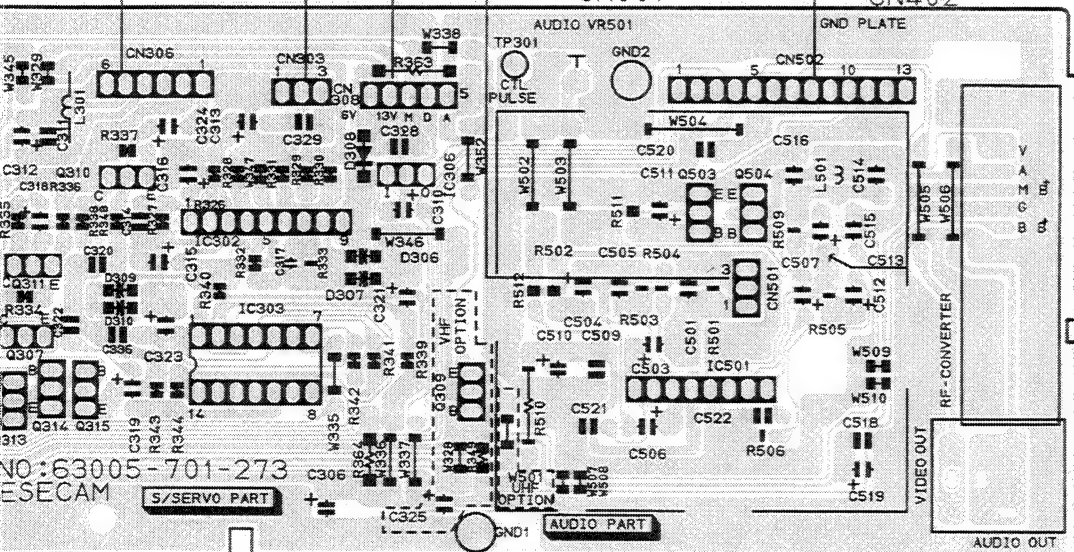
CN501

1	AUDIO IN
2	GND
3	GND

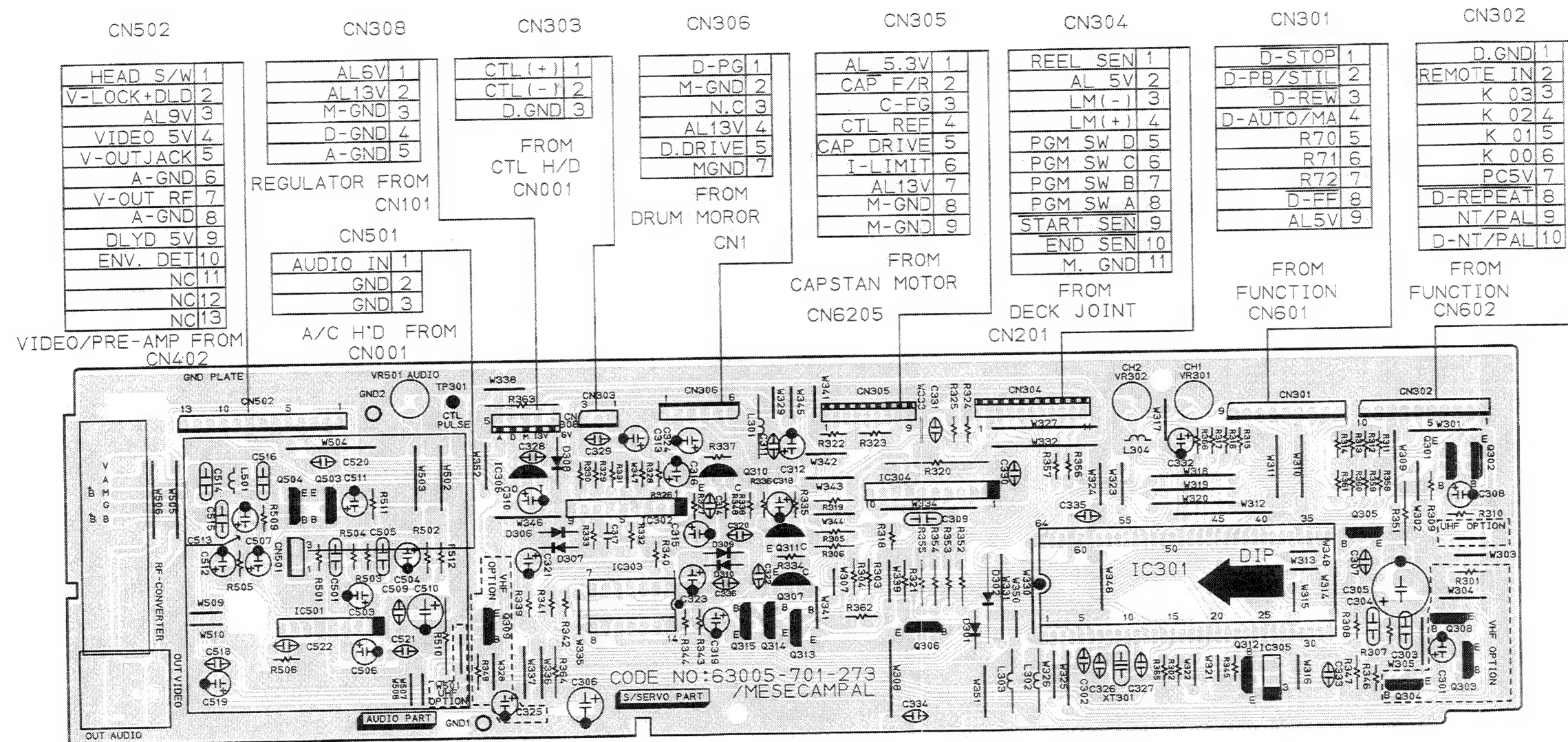
FROM A/C H'D
CN001

1	HEAD S/W
2	V-LOCK+DLD
3	AL9V
4	VIDEO 5V
5	V-OUTJACK
6	A-GND
7	V-OUT RF
8	A-GND
9	DLYD 5V
10	ENV. DET
11	NC
12	NC
13	NC

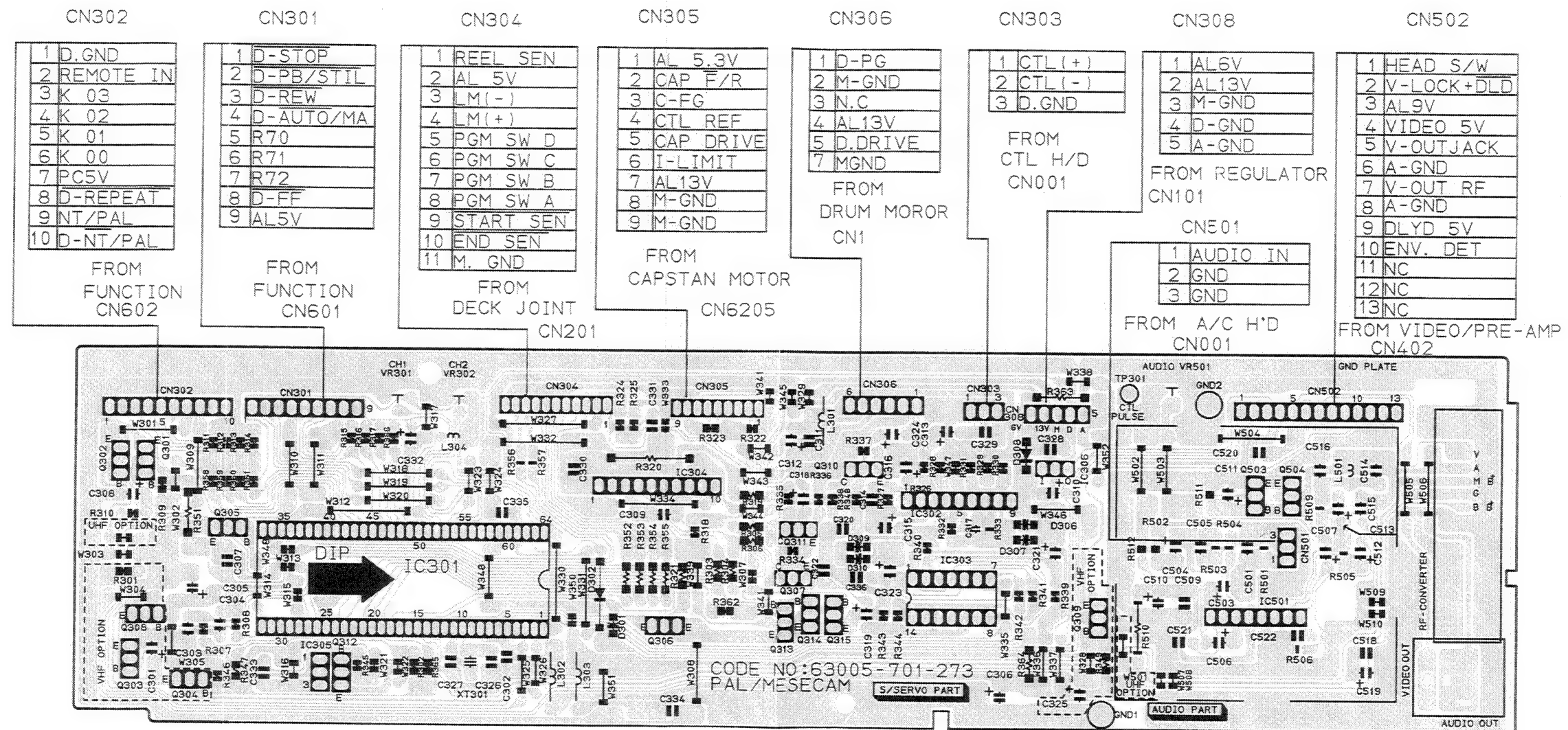
FROM VIDEO/PRE-AMP
CN402



9-10. Main. A (Top Side)



9-10. Main. A (Bottom Side)



9-11. Main. B (Top Side)

CN401

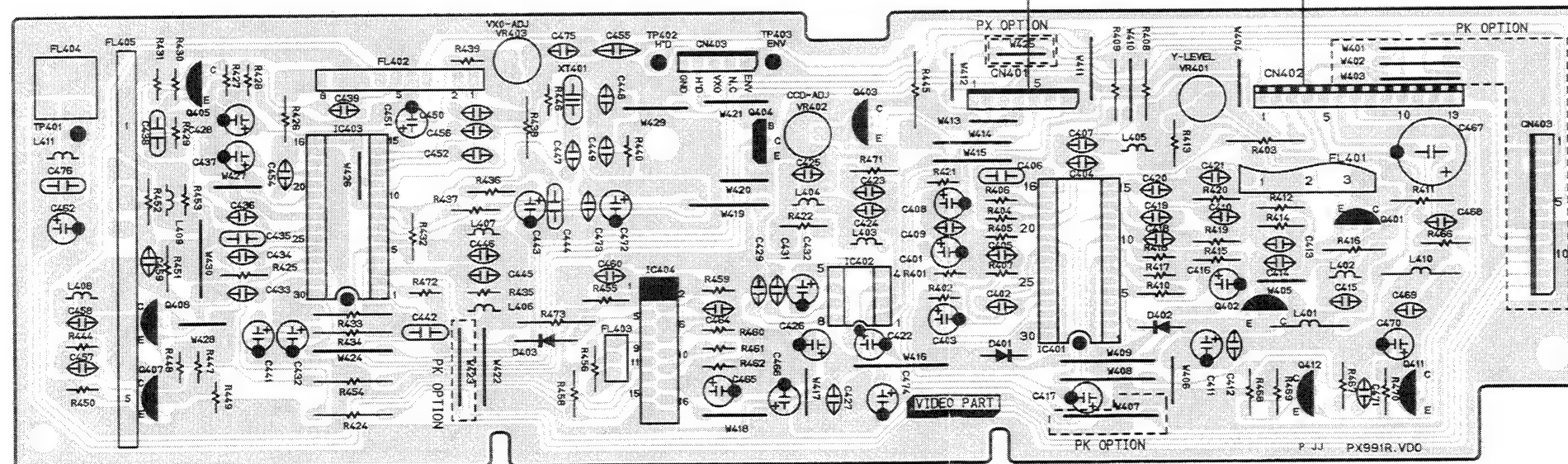
ENV-DET	1
VIDEO 5V	2
H'D SW	3
A-GND	4
PB-C	5
A-GND	6
PB-Y	7

TO
PRE/AMP
CN802

CN402

H'D SW	1
V-LOCK+DLD	2
AL 9V	3
VIDEO 5V	4
V-OUT JACK	5
A-GND	6
V-OUT RF	7
A-GND	8
DLD 5V	9
ENV. DET	10
N.C	11
N.C	12
N.C	13

TO
SYSCON/SERVO
CN502



9-11. Main. B (Bottom Side)

CN402

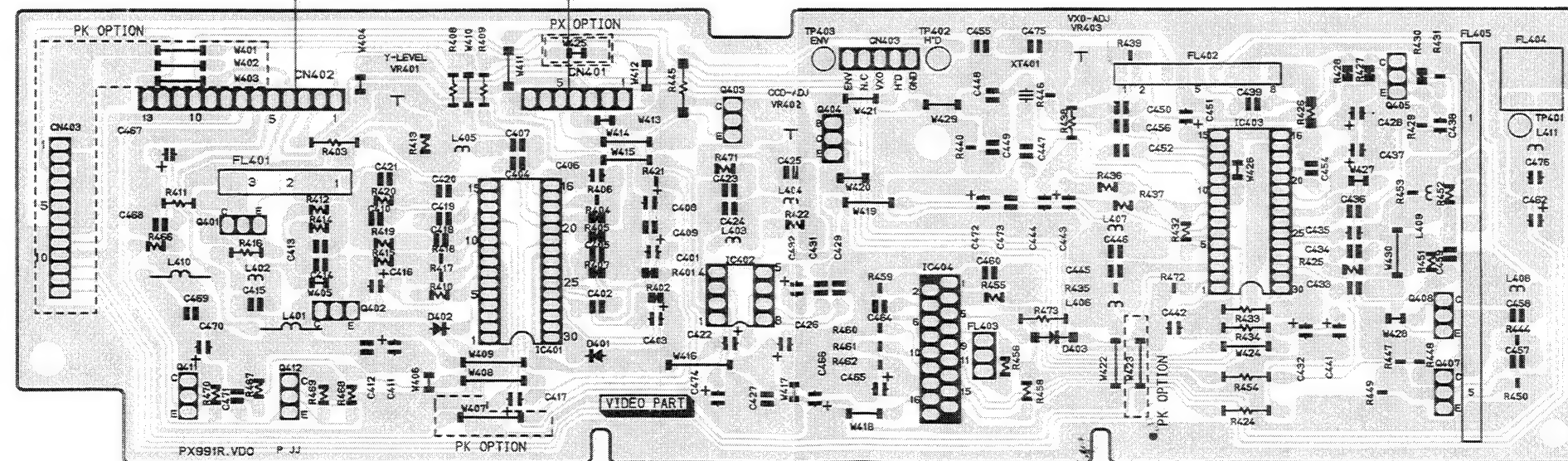
1	H'D SW
2	V-LOCK+DLD
3	AL 9V
4	VIDEO 5V
5	V-OUT JACK
6	A-GND
7	V-OUT RF
8	A-GND
9	DLD 5V
10	ENV. DET
11	N.C
12	N.C
13	N.C

TO
SYSCON/SERVO
CN502

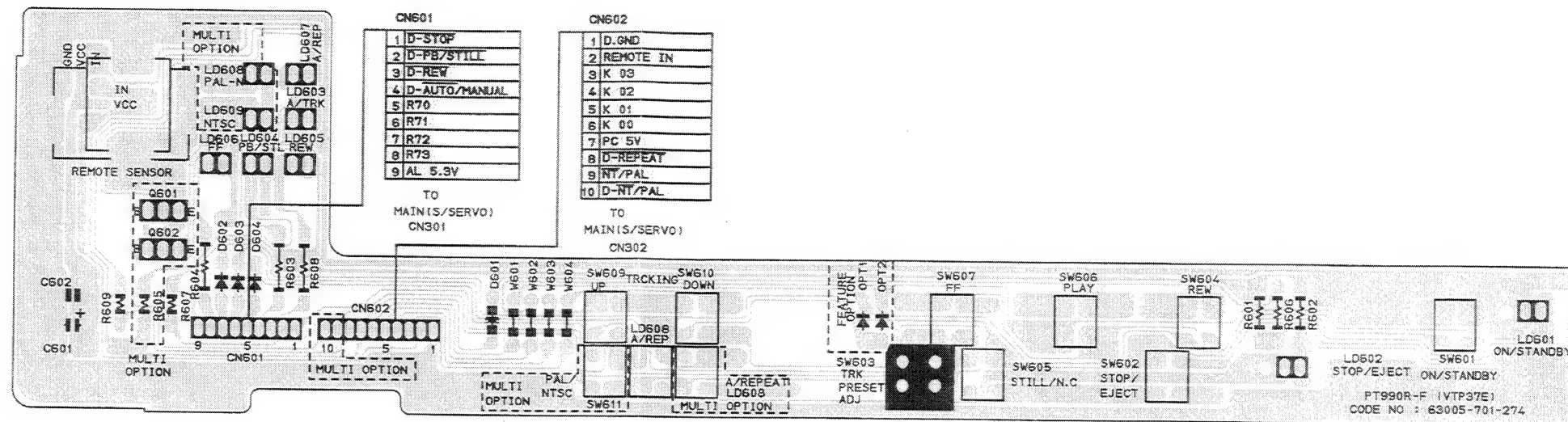
CN401

1	ENV-DET
2	VIDEO 5V
3	H'D SW
4	A-GND
5	PB-C
6	A-GND
7	PB-Y

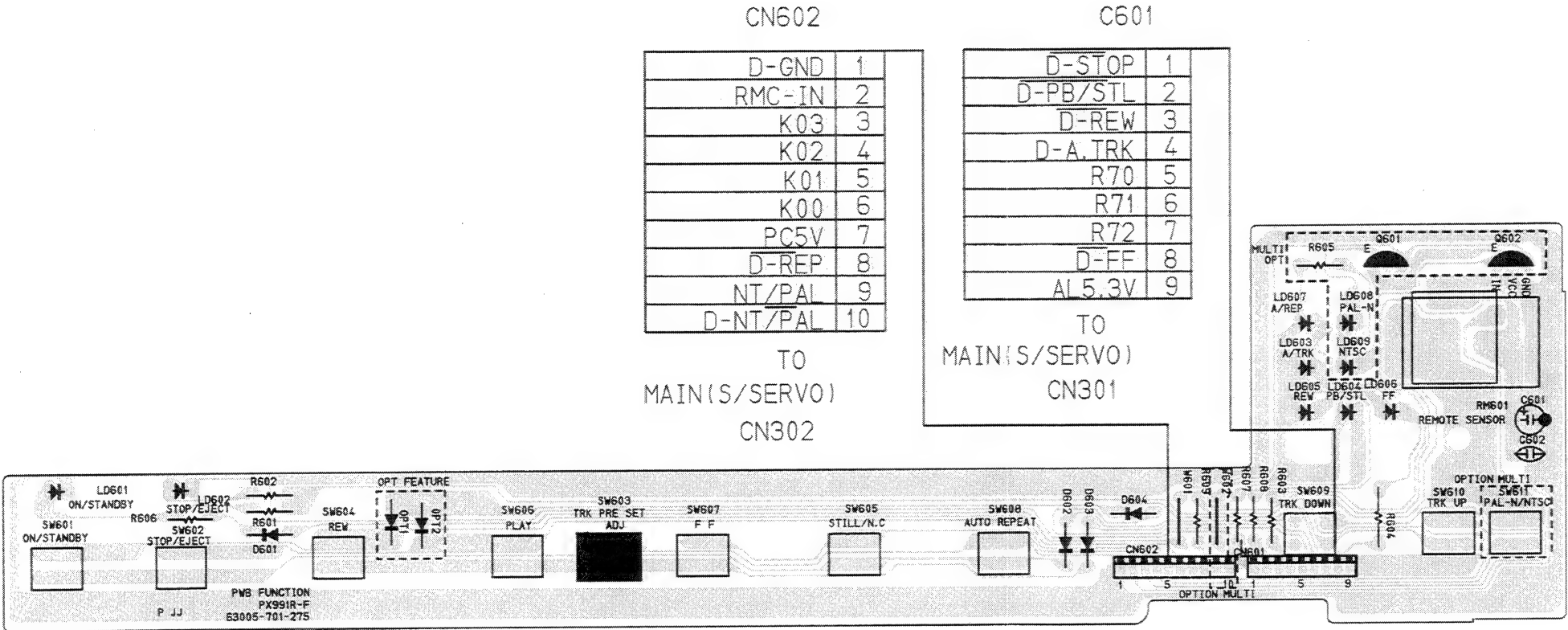
TO
PRE/AMP
CN802



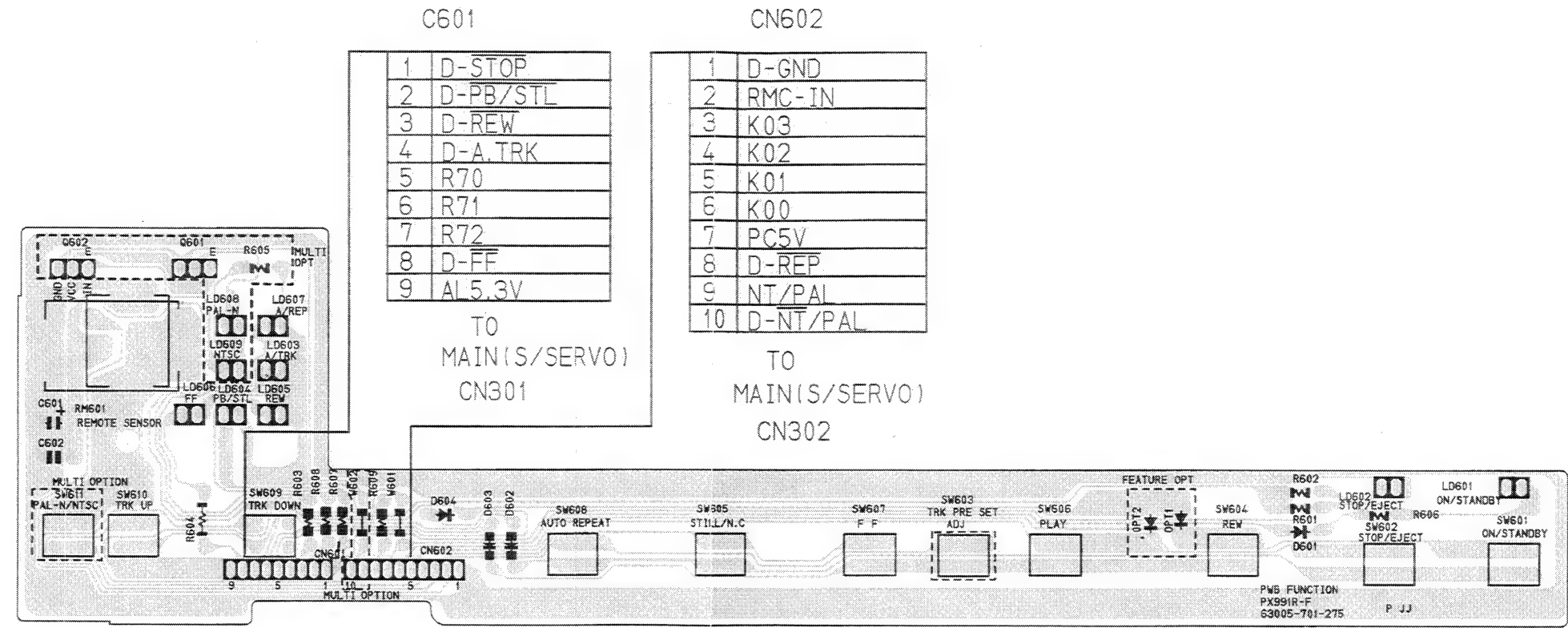
9-12. Function (PX-990/990R) (Bottom Side)



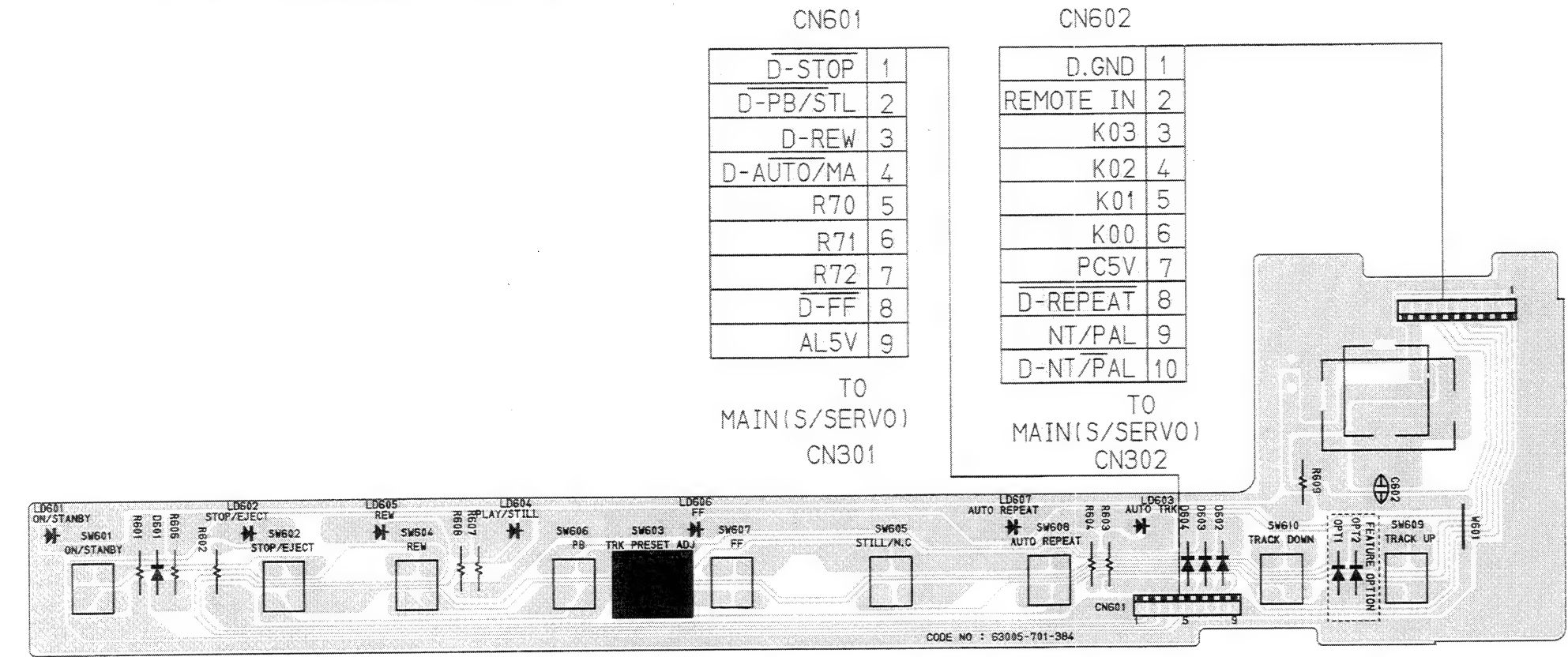
9-13. Function (PX-991/991R) (Top Side)



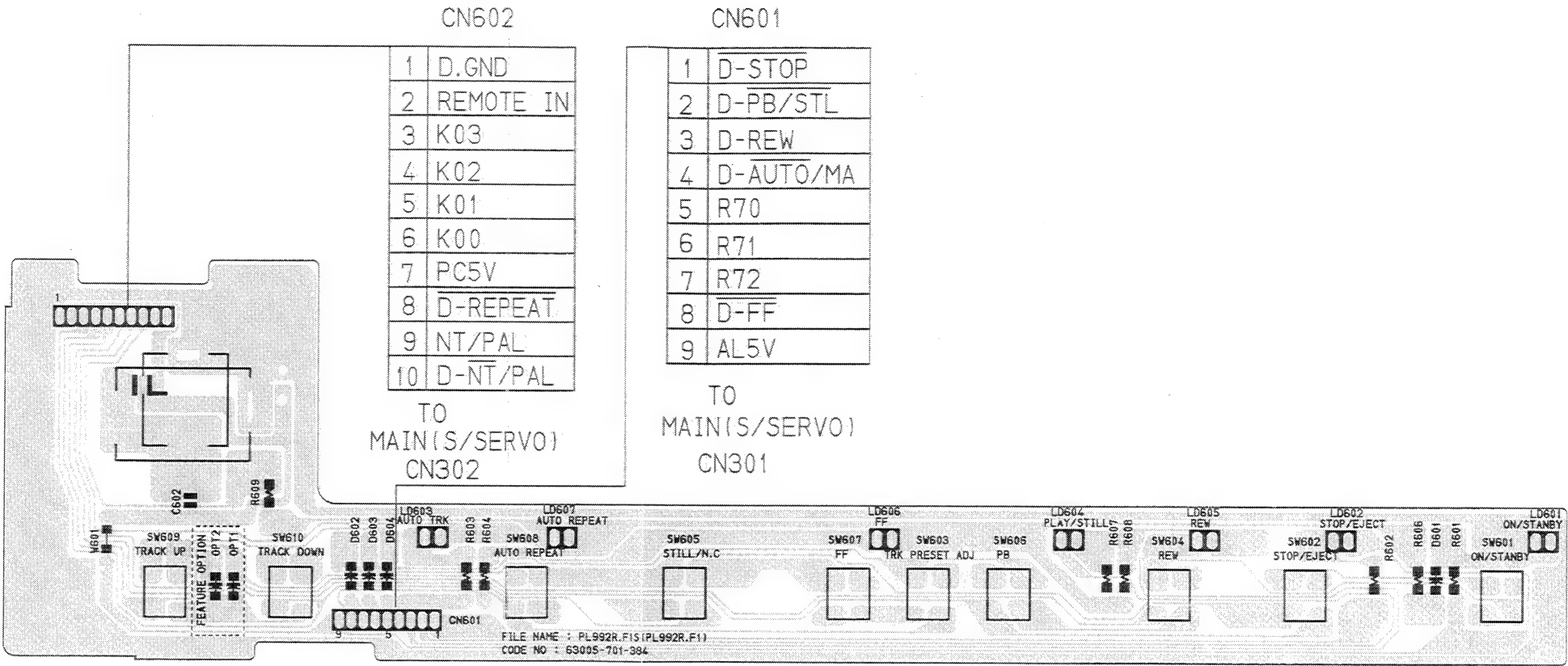
9-13. Function (PX-991/991R) (Bottom Side)



9-14. Function (PX-992/992R) (Top Side)



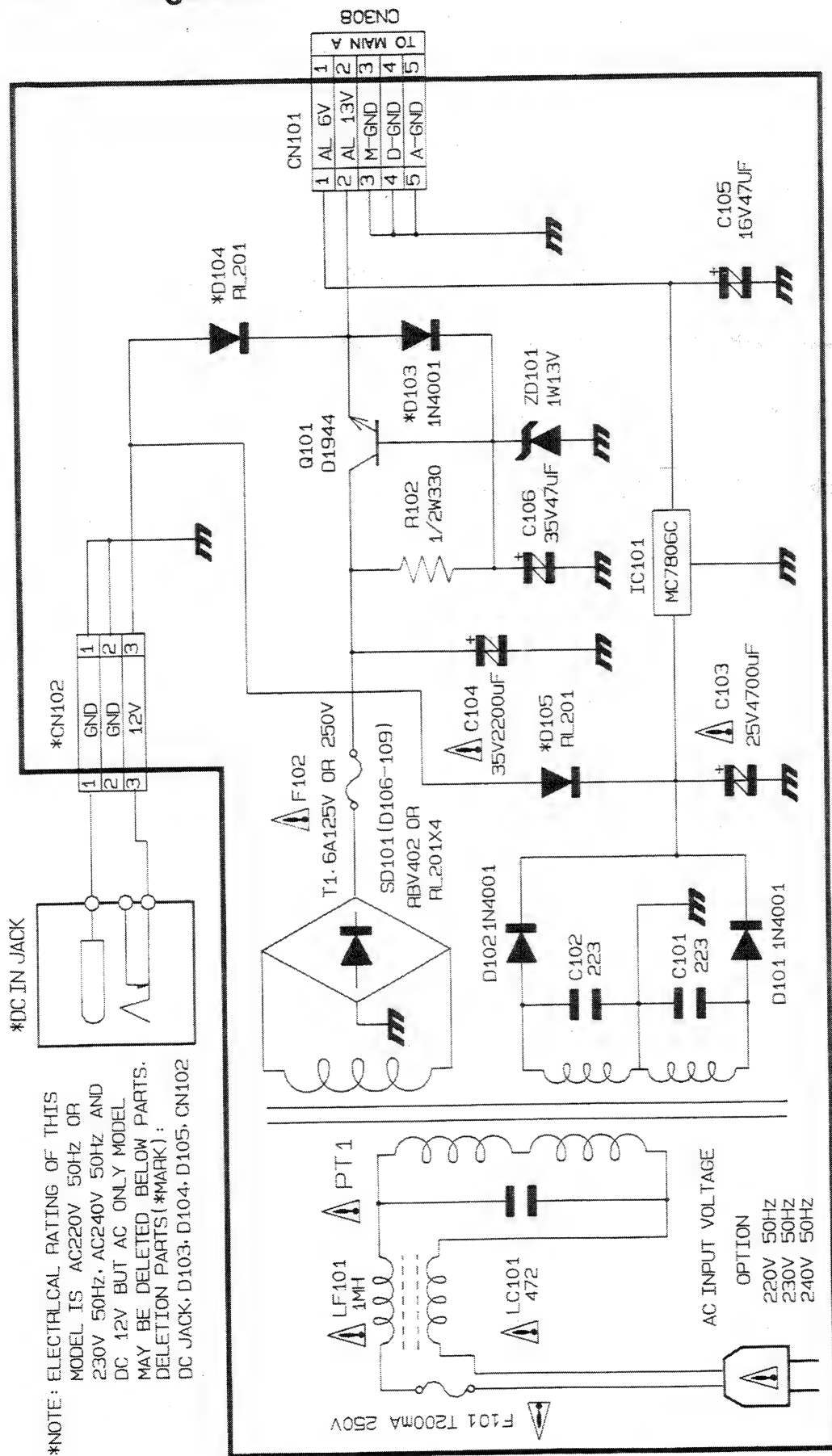
9-14. Function (PX-992/992R) (Bottom Side)



REGULATOR

REGULATOR

10-1. Regulator



IMPORTANT SAFETY NOTICES
Components identified with the mark Δ have the special characteristic for safety when replacing any of these components. Use only the same type.

SPECIAL NOTE
All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

NOTE
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list. And may be slightly different or amended since this drawing was prepared.

10. SCHEMATIC DIAGRAMS

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SYSCON / SERVO AUDIO / FUNCTION

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

IC301 (U83C51HB)									
PIN	PLAY	STOP	REW	FF	EJECT	FPS	RPS		
1	5.1	0.5	5.2	5.2	5.2	5.1	5.1		
2	5.1	5.2	5.2	0.5	5.2	0.5	5.1		
3	5.1	5.2	5.2	5.2	5.2	5.1	5.1		
4	5.1	0	5.2	5.2	0	5.1	5.1		
5	2.1	5.2	2.8	2.8	0	2.3	2.3		
6	2.6	2.7	2.8	2.8	5.2	2.7	2.3		
7	-	-	-	-	-	-	-		
8	5.1	5.2	5.2	5.2	5.2	5.1	5.1		
9	-	-	-	-	-	-	-		
10	3.2	3.2	3.2	3.2	3.2	3.1	3.2		
11	2.6	2.7	2.6	2.7	2.7	2.7	2.6		
12	4.2	4.2	0	0	0	4.2	4.2		
13	3.8	3.8	3.8	3.8	4.1	3.8	3.8		
14	0	3.1	3.1	3.1	3.4	0	0		
15	0	0	0	0	0	0	0		
16	-	-	-	-	-	-	-		
17	0	0	0	0	4.1	0	0		
18	5.1	0	0	0	5.2	5.1	5.1		
19	5.1	5.2	5.1	5.2	5.2	5.1	0		
20	0	0	5.2	5.2	5.2	0	5.1		
21	0	5.2	0	0	0	0	5.1		
22	0	0.6	0.6	0.6	0.6	0.6	0.6		
23	2.6	2.6	2.6	2.6	2.6	2.6	2.6		
24	2.7	2.7	2.7	2.7	2.7	2.7	2.7		
25	0	0	0	0	0	0	0		
26	0	0	4.3	0	4.3	0	4.3		
27	0	5.2	5.1	5.1	5.1	0	0		
28	5.0	5.2	5.2	5.2	5.2	5.0	5.0		
29	0	0	0	0	0	5.0	5.0		
30	1.6	1.6	1.6	1.6	0	1.7	1.7		
31	2.6	0	3.2	3.0	0	2.7	2.7		
32	0	0	0	0	0	0	0		

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

IC301 (U83C51HB)									
PIN	PLAY	STOP	REW	FF	EJECT	FPS	RPS		
33	-	-	-	-	-	-	-		
34	5.0	5.1	5.1	5.1	5.1	5.0	5.0		
35	3.1	5.2	3.0	3.0	0	2.7	3.1		
36	5.0	5.1	5.1	5.1	5.2	5.0	5.0		
37	0	0	0	0	0	0	0		
38	4.4	4.4	4.4	4.4	0.6	4.4	4.4		
39	4.7	4.7	4.7	4.7	0.6	4.7	4.7		
40	0	0	0	0	0	4.6	0		
41	0	0	0	0	0	0	0		
42	0	0	0	0	0	0	0		
43	0	0	0	0	0	0	0		
44	0	0	0	0	0	0	0		
45	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
46	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
47	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
48	0	0	0	0	0	0	0		
49	0	0	0	0	0	0	0		
50	-	-	-	-	-	-	-		
51	0	0	0	0	0	0	0		
52	5.0	5.2	5.2	5.2	5.2	5.0	5.0		
53	0.8	0	0	0	0	0	0.8		
54	1.2	1.2	1.2	1.2	1.2	1.2	1.2		
55	1.6	1.6	1.6	1.6	1.6	1.6	1.6		
56	-	-	-	-	-	-	-		
57	-	-	-	-	-	-	-		
58	-	-	-	-	-	-	-		
59	0	0	0	0	0	0	0		
60	-	-	-	-	-	-	-		
61	2.6	0	2.4	2.1	2.4	2.4	2.2		
62	0	0	0	0	3.7	0	0		
63	0.5	5.2	5.2	5.2	5.2	0.5	0.5		
64	5.1	5.2	0.5	5.2	5.2	5.1	0.5		

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

IC302 (LM358)									
PIN	PLAY	STOP	REW	FF	FPS	RPS			
1	5.1	5.2	5.2	5.2	5.1	5.1			
2	2.3	2.3	2.3	2.3	2.3	2.3			
3	2.3	2.3	2.3	2.3	2.3	2.3			
4	2.3	2.3	2.3	2.3	2.3	2.3			
5	0	0	0	0	0	0			
6	2.3	2.3	2.3	2.3	2.3	2.3			
7	2.3	2.3	2.3	2.3	2.3	2.3			
8	2.3	2.3	2.3	2.3	2.3	2.3			
9	5.1	5.2	5.2	5.2	5.1	5.1			

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

IC303 (KS74HLS132)									
PIN	PLAY	STOP	REW	FF	FPS	RPS			
1	5.1	5.2	5.2	5.2	5.2	5.1			
2	1.3	1.3	1.3	1.3	1.3	1.3			
3	1.9	5.2	1.9	1.9	2.4	2.1			
4	5.1	5.2	5.2	5.2	5.1	5.1			
5	1.3	1.4	1.3	1.3	1.3	1.3			
6	2.8	2.8	2.8	2.8	2.8	2.4			
7	0	0	0	0	0	0			
8	2.1	5.2	2.8	2.8	2.3	2.3			
9	5.1	5.2	5.2	5.2	5.1	5.1			
10	1.3	1.3	1.3	1.3	1.3	1.3			
11	-	-	-	-	-	-			
12	-	-	-	-	-	-			
13	-	-	-	-	-	-			
14	5.1	5.2	5.2	5.2	5.1	5.1			

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

IC304 (KA8301)									
PIN	PLAY	STOP	REW	FF	FPS	RPS			
1	0	0	0	0	0	0			
2	0.5	0.5	0.5	0.5	0.5	0.5			
3	0.9	0.9	0.9	0.9	0.9	0.9			
4	0.9	0.9	12.1	12.1	0.9	0.9			
5	2.3	2.3	2.3	2.3	2.3	2.3			
6	2.3	2.3	2.3	2.3	2.3	2.3			
7	11.9	12.8	12.2	12.3	11.7	11.5			
8	11.9	12.8	12.2	12.3	11.7	11.5			
9	0.9	0.9	0.9	0.9	0.9	0.9			
10	0.5	0.5	0.5	0.5	0.5	0.5			

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

MODE	PLAY			STOP			FF			REW			UNLOAD		
TR.NO	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Q301	0	0	5.7	0	0	5.8	0	0	5.8	0	0	5.8	0	0.9	5.8
Q302	5.0	5.0	5.7	5.1	5.1	5.8	5.1	5.8	5.1	5.1	5.8	5.1	5.1	5.8	5.1
Q303	0	5.7	0.1	0	3.1	0.1	0	3.1	0.1	0	3.1	0	0	3.1	0.1
Q304	5.0	5.7	5.0	0	0	5.1	0	0	5.1	0	0	5.1	0	0	5.1
Q305	0	0	3.7	0	0	3.6	0	0	3.6	0	0	3.6	0	0	3.7
Q306	0	4.2	0	0	4.2	0	0	12.7	0	0	12.7	0	0.5	12.9	
Q307	12.7	12.7	0.9	13	13	0.9	12.8	12.7	12.8	12.7	12.9	13	12.9		
Q308	0	0	5.8	0	5.1	0	0	5.1	0	0	5.1	0	0	5.1	0
Q309	5	5.8	5.1	0	0	5.2	0	0	5.2	0.3	0	5.2	0	0	5.2
Q310	0.3	0.9	3	0.3	0.9	3	0.3	0.9	3	0.3	0.9	3	0.3	0.9	3
Q311	0.7	1.2	3	0.7	1.4	2.6	0.7	1.4	2.6	0.7	1.4	2.6	0.7	1.4	2.6
Q312	0	4.7	0	0	4.8	0	0	4.8	0	0	4.8	0	0	4.8	0

FF : FAST FORWARD
FPS : FORWARD PICTURE SEARCH
RPS : REVERSE PICTURE SEARCH

IC501 (KA2221)									
PIN	PLAY	STOP	REW	FF	FPS	RPS			
1	1.3	1.3	1.3	1.3	1.3	1.3			
2	0.7	0.7	0.7	0.7	0.7	0.7			
3	2.2	2.2	2.2	2.2	2.2	2.2			
4	8.2	8.2	8.2	8.2	8.2	8.2			
5	0	0	0	0	0	0			
6	2.0	2.0	2.0	2.0	2.0	2.0			
7	0.7	0.7	0.7	0.7	0.7	0.7			
8	1.3	1.3	1.3	1.3	1.3	1.3			

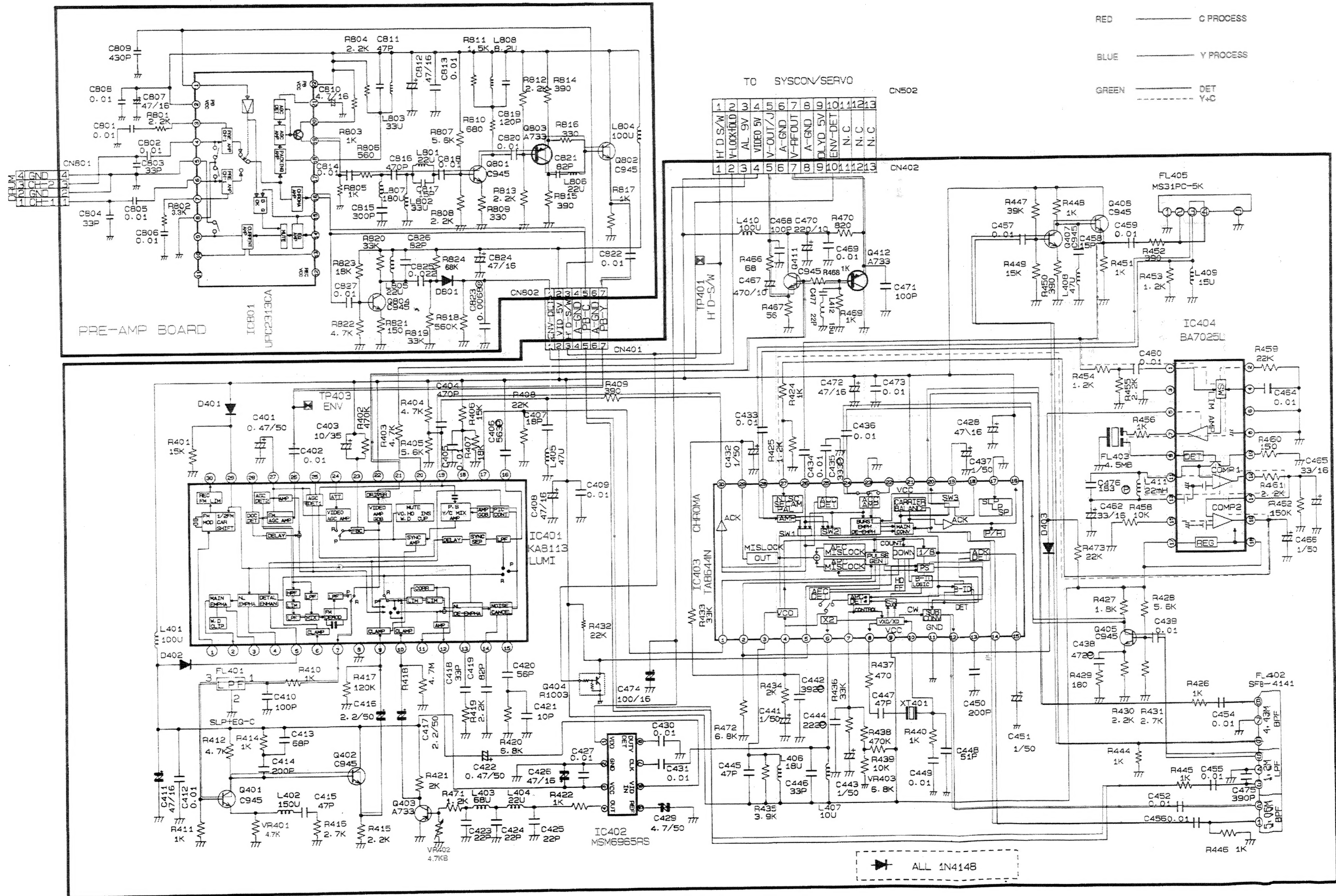
FF : FAST FORWARD

MODE	PLAY			STOP			FF			REW			UNLOAD		
TR.NO	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Q501	0	0	1.5	0	0	2.4	0	0	2	0	0	0	0	0	0.8
Q502	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q503	0	0	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0
Q504	0	0	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0
Q505	0	3.3	0	0	3.3	0	0	3.3	0	0	3.3	5.9	0	3.3	0

PRE-AMP

LUMINANCE/ CHROMINANCE

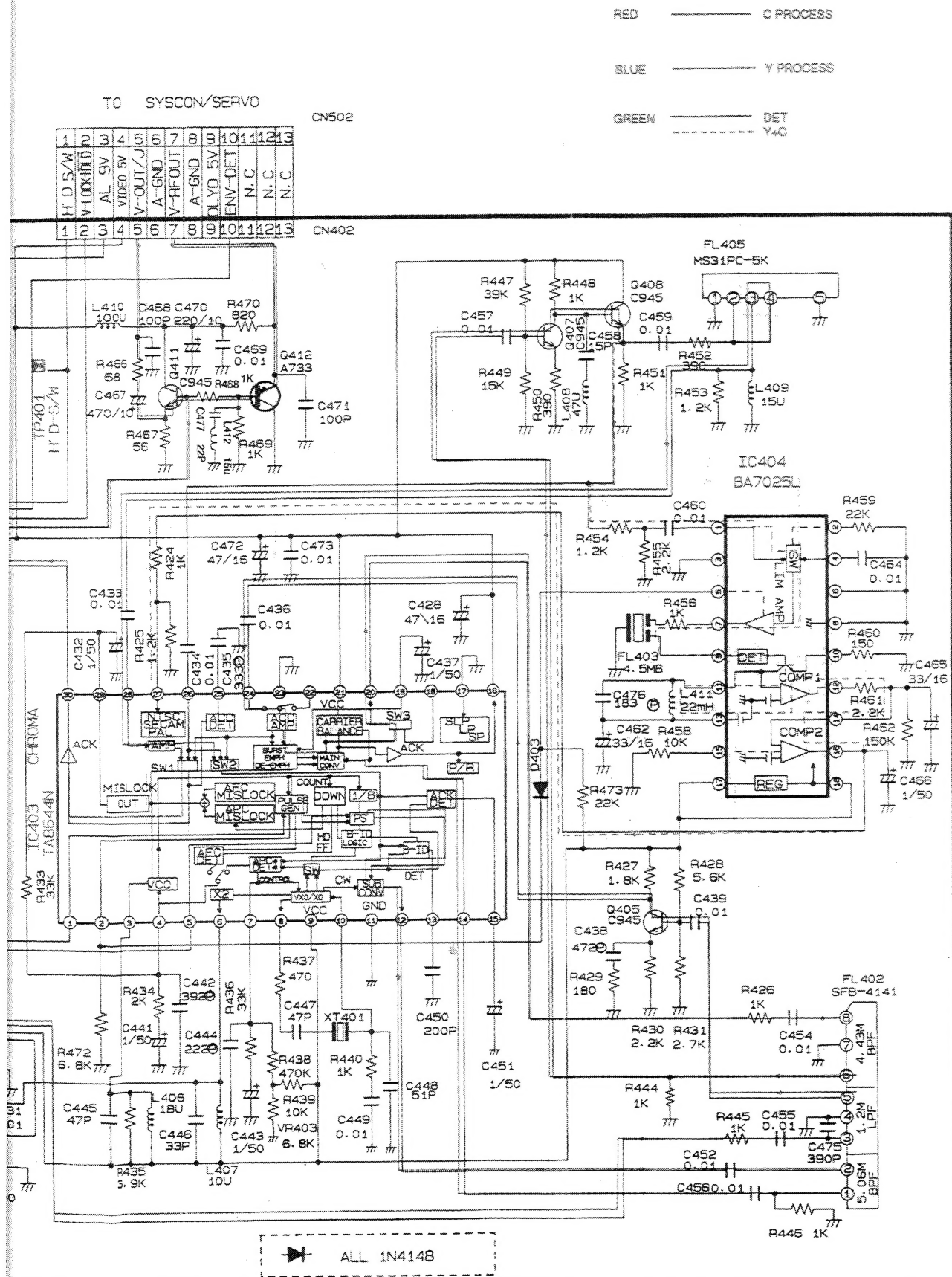
10-3. Luminance/Chrominance/Pre-Amp



LUMINANCE/
CHROMINANCE

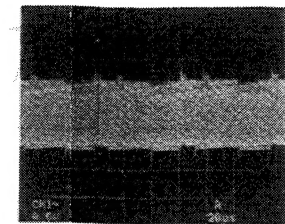
PRE-AMP

LUMINANCE/
CHROMINANCE

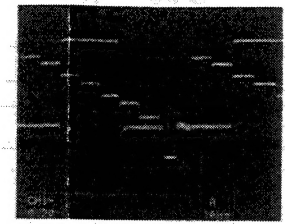


NOTE
Do not use the part number shown on this drawing for
ordering. The correct part number is shown in the parts
list. And may be slightly different or amended since this
drawing was prepared.

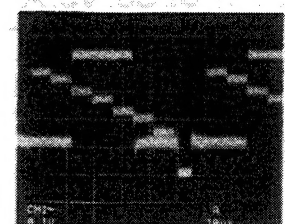
SPECIAL NOTE
All integrated circuits and many other semiconductor
devices are electrostatically sensitive and therefore re-
quire the special handling techniques described under
the "electrostatically sensitive (ES) devices" section of
this service manual.



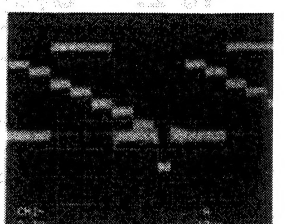
IC401-7
DE MOD WAVE
500mV/20us



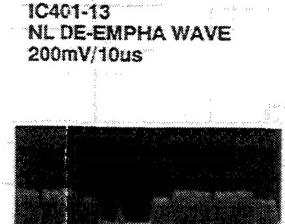
IC401-9
DE-EMPHA WAVE
100mV/10us



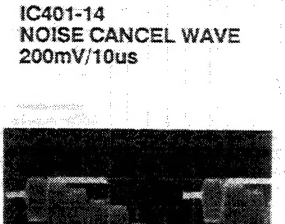
IC401-10
1H DELAYED IN
100mV/10us



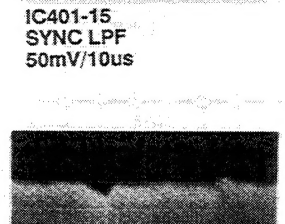
IC401-12
CCD
100mV/10us



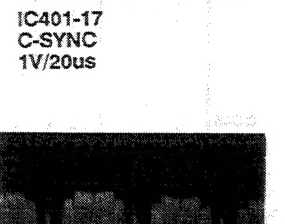
IC401-13
NL DE-EMPHA WAVE
200mV/10us



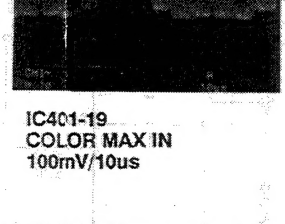
IC401-14
NOISE CANCEL WAVE
200mV/10us



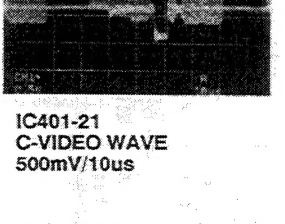
IC401-15
SYNC LPF
50mV/10us



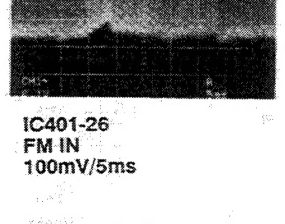
IC401-17
C-SYNC
1V/20us



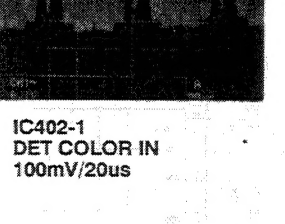
IC401-19
COLOR MAX IN
100mV/10us



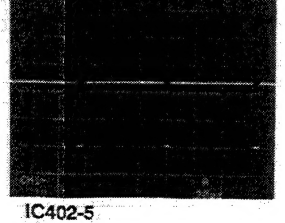
IC401-21
C-VIDEO WAVE
500mV/10us



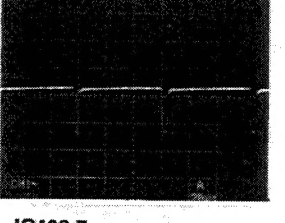
IC401-26
FM IN
100mV/5ms



IC402-1
DET COLOR IN
100mV/20us



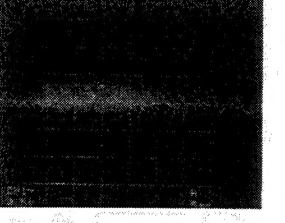
IC402-5
BGP IN
1V/20us



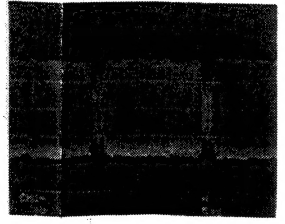
IC402-7
BURST GATE COLOR
1V/20us



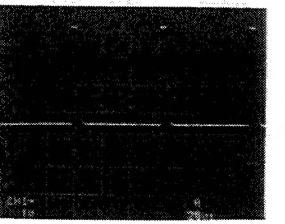
IC402-9
1/2H COLOR WAVE
100mV/20us



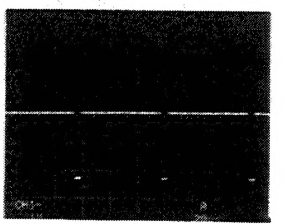
IC402-11 (PAL)
1/2H AMP WAVE
500mV/5ms



IC402-11 (MESECAM)
1/2H AMP WAVE
1V/5ms



IC403-1
C-SYNC IN
1V/20us

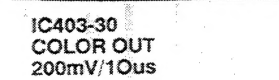
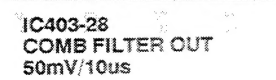
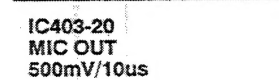
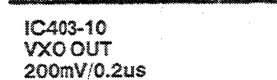
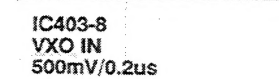


IC403-2
BGP OUT
1V/20us



IC403-3
fsc
100mV/0.5us

**LUMINANCE/
CHROMINANCE**



MODE	PLAY		
T.B	F	C	C

FWD. S	JET REV. S	STILL	A/
--------	------------	-------	----

[illegible]

PRE-AMP

PIN NO	PLAY	ST
--------	------	----

LA 7323				
S	REV. S	JET FWD. S	JET REV. S	STILL

[illegible]

PIN NO	PLAY	ST
--------	------	----

6965RS)				
S	REV. S	JET FWD	JET REV	STILL

[illegible]

I		
PIN NO	PLAY	ST

13CA OR KA8102				
S	REV. S	JET	JET	STILL

[illegible]

**LUMINANCE/
CHROMINANCE**

PIN NO	PLAY	ST
--------	------	----

3644N)				
S	REV. S	JET FWD. S	JET REV. S	STILL

[illegible]

PIN NO	PLAY	PR
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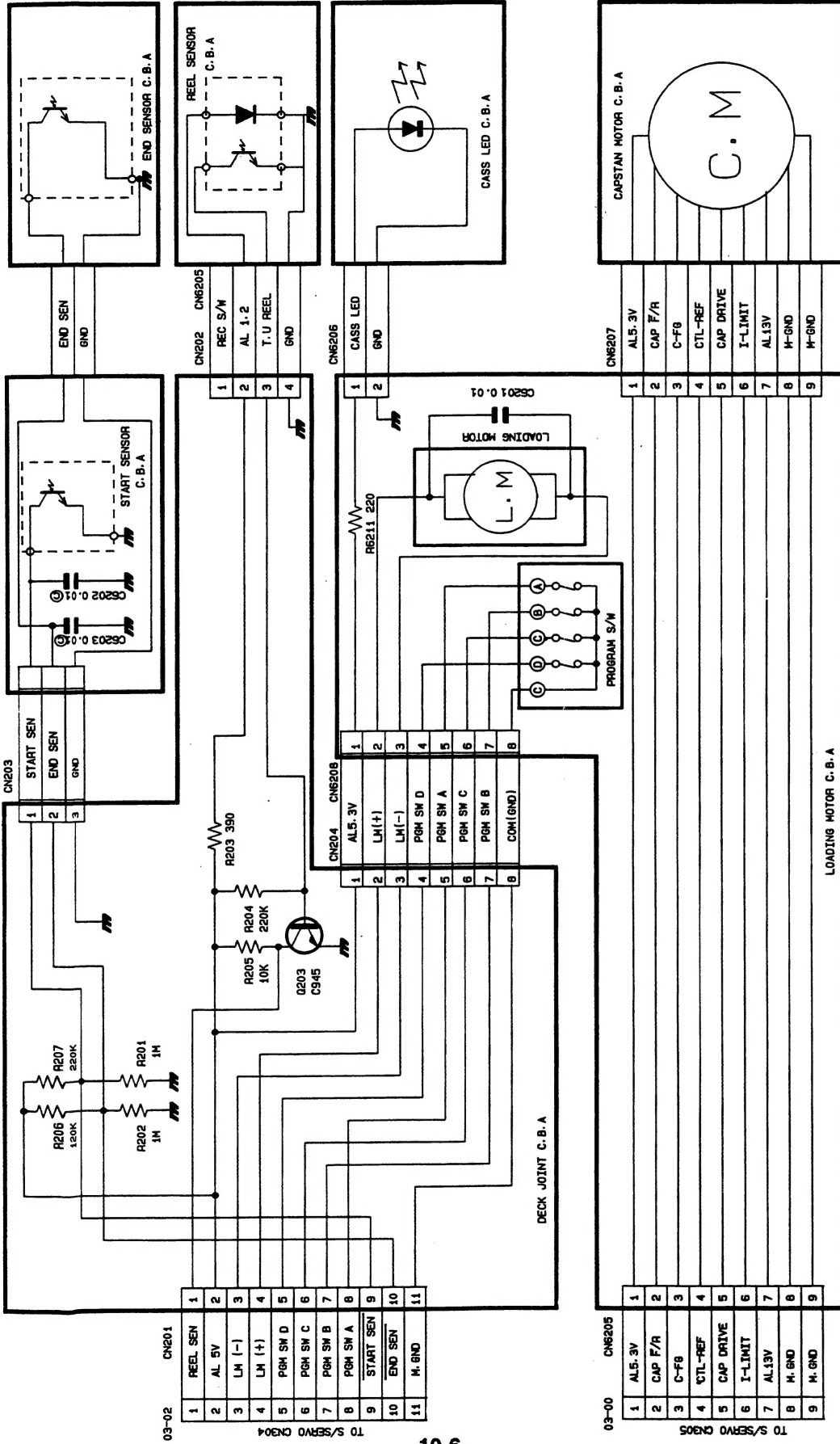
70251)			
V.S	JET FNO.S	JET REV.S	STILL

[illegible]

DECK JOINT

DECK JOINT

10-4. Deck Joint



REMOTE CONTROL

REMOTE CONTROL

10-5. Remote Control

